Issue 25 £1

January/February

Page 6

Atari Users Magazine

INCLUDING STAGE FOR ST USERS

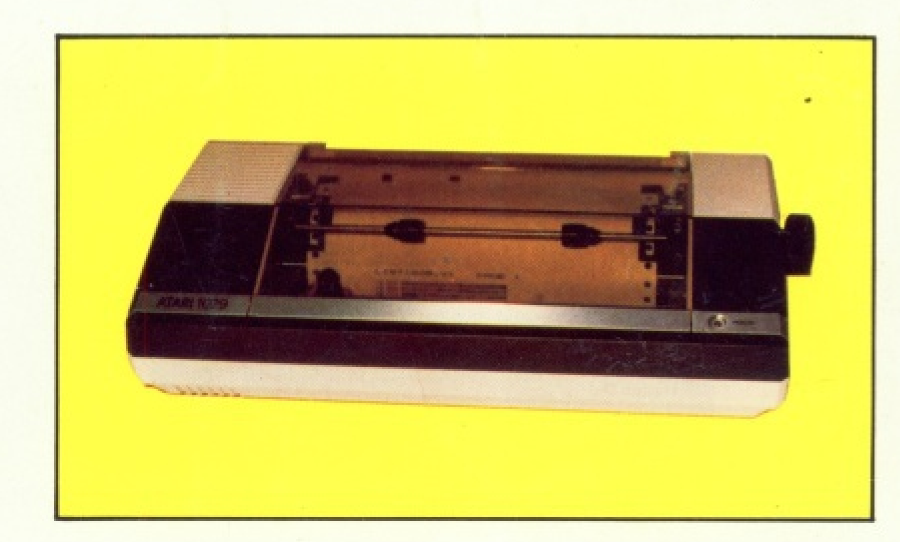
STAGE
The PAGE 6 ST section

Type-In
OTHELLO
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WINTER GAMES
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and MORE!

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1029 EVERYTHING YOU ALWAYS WANTED!

DISKS HOW THEY STORE ALL THAT DATA

PAGE FLIPPING

REVIEWS -- SILENT SERVICE -- NINJA -- SCREAMING WINGS -- QUESTPROBE and MANY MORE

'The magazine for the dedicated Atari user'

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PAGE 6 is a users' magazine which relies entirely on readers' support in submitting articles and programs. The aim is to explore ATARI computing through the exchange of information and knowledge. We will endeavour to pay for articles and programs where appropriate and we hope that readers will enjoy seeing their work published. In turn we hope that other readers will learn from the articles and programs submitted and increase their enjoyment of ATARI computing.





Issue 25
January/February 1987

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Please make cheques payable to PAGE 6.

Editorial

THE NEW ATARI?

As most of you will know by now there has been a change of top management at Atari in the UK with Bob Gleadow appointed as UK Managing Director and another ex-commodore man as Sales Manager. Bob Gleadow was the man who was strongly rumoured to be taking over in the UK when Jack Tramiel bought Atari but it never happened and, as we all know, Atari trundled on in much the same way as always. Nobody can seriously claim, despite the presence of the ST, that Atari has achieved the position in the UK that we all hoped for when Jack Tramiel took over. There have been many changes of management over the years at Atari and each time everybody involved with supporting Atari has thought 'Is this it? Are we now going to see some real advertising and a push to get Atari into its rightful place in the UK?'. It never has happened and those who have been selling and supporting Atari over the past four or five years have tended to become a little jaded. Will it happen this time? Who knows, but early signs are encouraging. Atari were initially not going to attend the recent Atari Christmas Show but changed their minds when Bob Gleadow took over and we actually received a phone call from someone at Atari offering 'encouragement' and wanting to know more about us. Just past our fourth birthday and someone at the top of Atari knows we exist! It is evident that this new man wants to know what is going on in the Atari world and is anxious to find out what support there is which is the first step to success. Let us hope this time that this really is it.

1029 PRINTER

Okay 1029 printer owners, this is the issue you have been waiting for. I have mentioned before that we had some material for the 1029 and I had planned to run it over several issues but have decided instead to put all the most useful items in this one issue for easy reference. I was going to do a long article on the 1029 myself but having got hold of one it has to be acknowledged that it is a very basic printer, and quite honestly the manual *does* cover everything the printer can do. All it needs is someone with a little programming experience to expand upon the manual. Here you have it. Turn to the section on the 1029 and enjoy!

ANNUAL READERS POLL

As we now are able to pay for most of our contributions I had thought about dropping the Readers Poll but it has proved invaluable in the past to see what you are interested in and can always double as a survey. Instead of the usual prizes for winning contributors we will this year present the winners with a handsome trophy in recognition of the thanks given by the readers. Maybe next year we will extend the idea a little to have an annual PAGE 6 Awards ceremony for everyone who has supported Atari? For now, please vote and please also use the survey to let us now what you would like to see in the magazine. Tell us about the areas you feel we have not yet covered and we will do our best to bring them to you.

MORE CONTRIBUTIONS

Following on from the above, I need to make my occasional plea for more contributions, especially of programs. We are running short of top class programs of all kinds but particularly games. There must be more out there just dying to get into print so please send them in. The more documentation and written detail you can provide the better the chance of being accepted, but don't let lack of documentation stop you, send them in anyway! We have had a few problems coping with everything during the last year, what with three exhibitions, moving offices and a lot more besides and some contributors have not had their submissions acknowledged. For that I apologise but I crave your understanding and hope that you will keep them coming. We have now got ourselves straightened out now and things will improve. I promise! Only if you send in some great programs and articles though!

Les Ellingham

How to Type in the Listings

and get them right!

The program listings in PAGE 6 are prepared carefully to ensure that they can be typed in as easily as possible. Before typing any listings ensure that you are familiar with the use of the Shift and CONTROL and INVERSE keys as outlined in your computer manual. The listings are prepared to match exactly what you see on screen. Every character that you may see in a listing is included in the chart below for cross reference. By using TYPO 3 you can ensure that you type in the programs EXACTLY as they are printed. Remember a single typing mistake may mean a program will not run.

WHAT ARE THOSE CODES?

Each line of a program begins with a special two letter code. THESE SHOULD NOT BE TYPED IN. They are used by the program TYPO to check that you have typed each line correctly. IF YOU HAVE NOT ALREADY TYPED IN THE TYPO 3 LISTING PLEASE DO SO NOW. The program can be used as you type in each line of a program or to check an already typed program. The code for each line will match but if you have problems check the listing conventions below carefully, you are most probably typing a CONTROL character incorrectly. TYPO 3 cannot check if a line has been missed so if you have problems in running a listing count the lines in the program and ensure none are missing. If the TYPO codes match and the program still does not run, LIST it to cassette or disk using LIST "C:" or LIST "D:filename", switch off the computer, re-boot and then ENTER the program using ENTER "C:" or ENTER "D:filename". Save this version in the normal way.

HOW TO USE TYPO 3

1. Type in the listing carefully for although you can use TYPO 3 to check itself (see 6 below) it may not work if you have made mistakes.

2. SAVE or CSAVE a copy of the program.

3. Each time you want to type in a program listing RUN TYPO 3 *first*. The program will install a machine code routine in memory and then delete itself. Now type in a line as shown in the magazine *excluding the first two letter code* and press RETURN.

4. A two letter code will appear at the top left of your screen. If this code matches the one in the magazine carry on and type the next line. Note, the code will not match if you use abbreviations. If you prefer to use abbreviations LIST the line you have just typed, move the cursor to that line and press RETURN. The code should now match.

5. If the code does not match, use the editing keys to correct the line and press RETURN again. Repeat if necessary until the codes match.

6. To check a line you have already typed LIST the line, place the cursor on that line and press RETURN.

7. When you have finished a listing just SAVE or CSAVE it in the normal way.

You can type in a program without using TYPO 3 and then check it by SAVEing or CSAVEing a copy of the program, running TYPO 3 and then LOADing or CLOADing your program and proceeding as in step 6 above.

Always SAVE or CSAVE a program before running it and always use TYPO before telling us that a program will not run.

```
EI 1 REM ********************************
AL 2 REM *  TYPO III by Alec Benson     *
        *          June 1985            *
SA 3 REM * A proofreader for ANTIC and *
        *   PAGE 6 based on TYPO II    *
        * published by ANTIC magazine *
EL 4 REM ********************************
SG 100 GRAPHICS 0
WG 110 FOR I=1536 TO 1791:READ A:CK=CK+A:
   POKE I,A:NEXT I
CG 120 IF CK<>30765 THEN ? "Error in DATA
    statements - Check Typing":END
YM 130 A=USR(1536)
VT 140 ? :? "TYPO III is up and running":
   NEW
MA 1000 DATA 104,160,0,185,26,3,201,69
HG 1010 DATA 240,8,200,200,200,192,36,208
QB 1020 DATA 242,96,200,169,79,153,26,3
RK 1030 DATA 200,169,6,153,26,3,162,0
RR 1040 DATA 189,0,228,157,79,6,232,224
TO 1050 DATA 15,208,245,169,93,141,83,6
KC 1060 DATA 169,6,141,84,6,173,4,228
EU 1070 DATA 105,0,141,95,6,173,5,228
BK 1080 DATA 105,0,141,96,6,169,0,162
KK 1090 DATA 3,149,203,202,16,251,96,0
ZR 1100 DATA 0,0,0,0,0,0,0,0
LD 1110 DATA 0,0,0,0,0,0,32,94
JM 1120 DATA 6,8,72,201,155,240,55,230
TV 1130 DATA 203,133,209,138,72,169,0,133
TW 1140 DATA 208,162,8,10,38,208,6,209
MF 1150 DATA 144,7,24,101,203,144,2,230
RL 1160 DATA 208,202,208,239,133,207,24,1
   65
TM 1170 DATA 204,101,207,133,204,165,205,
   101
AW 1180 DATA 208,133,205,165,206,105,0,13
   3
XH 1190 DATA 206,104,170,104,40,96,138,72
NR 1200 DATA 152,72,162,0,134,207,134,208
GF 1210 DATA 160,24,6,204,38,205,38,206
EA 1220 DATA 38,207,38,208,56,165,207,233
TM 1230 DATA 164,170,165,208,233,2,144,4
SK 1240 DATA 134,207,133,208,136,208,227,
   162
CB 1250 DATA 8,165,207,133,204,165,208,6
XN 1260 DATA 204,42,201,26,144,4,233,26
MB 1270 DATA 230,204,202,208,242,133,205,
   169
BC 1280 DATA 128,145,88,200,192,40,208,24
   9
WV 1290 DATA 165,204,105,160,160,3,145,88
QA 1300 DATA 165,205,24,105,161,200,145,8
   8
MQ 1310 DATA 32,69,6,104,168,76,153,6
```

Lower case	Inverse lower	Upper case or Shift	Inverse Upper or Shift	CTRL	Inverse CTRL
1		!			
2		"			
3		#			
4		$			
5		%			
6		&			
7		'			
8		@			
9		(			
0		)			
<					
>					
a		A			
b		B			
c		C			
d		D			
e		E			
f		F			
g		G			
h		H			
i		I			
j		J			
k		K			
l		L			
m		M			
n		N			
o		O			
p		P			
q		Q			
r		R			
s		S			
t		T			
u		U			
v		V			
w		W			
x		X			
y		Y			
z		Z			
-		_			
=		|			
;		:			
+		\			
*		^			
,		[			
.		]			
/		?			

	ESC ESC
↑	ESC CTRL -
↓	ESC CTRL =
←	ESC CTRL +
→	ESC CTRL *
	ESC SHIFT CLEAR
	ESC DELETE
	ESC TAB
	ESC SHIFT DELETE
	ESC SHIFT INSERT
	ESC CTRL TAB
	ESC SHIFT TAB
	ESC CTRL 2
	ESC CTRL DELETE
	ESC CTRL INSERT

■ INVERSE SPACE

CAN YOU COPE?

If all those late nights at the computer are proving too much for you then Mind Link Communications Inc. might have just the product to allow you to relax while still remaining totally addicted to your Atari!

The Canadian based company have released THE MIND TUNER for all 8 bit Ataris, a unique program that claims to help manage stress and to improve personality and performance using proven psychological principles. It is not a game but an attempt to use the computer seriously in a beneficial way. The program comes with a 42 page booklet explaining the principles and how to apply them and what's more they guarantee results!

If you are interested you can get more details from Mind Link Communications Inc. Box 488, 36, Adelaide Street E., Toronto, Ontario, Canada, M5C 2J6. The program costs $24.95 U.S plus shipping.

LOOK OUT FOR ...

Some new compilations from U.S. Gold on cassette at £9.99. Two collections entitled Shoot 'Em Up featuring Super Zaxxon, Dropzone, Blue Max 2001 and Fort Apocalypse and Scott Adams Scoops with Voodoo Castle, Strange Odyssey, Buckaroo Bonzai and Pirate Adventure. By the way did you know that Adventure International had gone into liquidation? It looks though as if their titles may survive in other guises.

ROBICO PROMISE

The Robico adventure RICK HANSON should be with you now and it is claimed to give Level 9 a run for their money! In a recent Awards ceremony in A & B Computing magazine, Rick Hanson was voted Best Electron Adventure, Best Tape Based BBC Adventure (jointly with Worm in Paradise) and Robico's Enthar Seven was voted Best Overall Adventure.

Improved versions are promised for the XL/XE so it looks as if adventurers are in for a treat!

TRIVIAL PURSUIT

The world famous game comes at last to your computer and you now have the chance to contribute towards another yacht in the Bahamas for the inventors! Domark have the computer rights and as well as the Genus Edition have now brought out a Young Players Edition available as a separate game for the XL/XE at £14.95 on cassette and £19.95 on disk. Do you know how many hairs Tweetie Pie has on his head? Your Atari will now know the answer.



MINORITY INTERESTS

For those interested in the more esoteric side of computing such as amateur television or robots, a new newsletter called SIGNEWS recently came our way. Issue 2 has only eight page but is full of the sort of information you don't normally see published. They are looking for more contributions on any minority interest. If you are interested drop a line to Glenn Leader, 143, Richmond Road, Leytonstone, London, E11 4BT for more details.

Those interested deeply in Adventures might like to subscribe to Adventure Contact run by Pat Winstanley at 13, Hollington Way, Wigan, WN3 6LS. Their excellent little newsletter features little for the Atari but will be interesting for those deeply hooked on adventures. It is aimed primarily at those who write, or want to write, their own adventures.

XLENT SOFTWARE COMES TO THE UK

XLENT Software, who have produced some excellent utilities for Atari such as Megafont, now have a UK company to bring their products to the European market. XLENT Software (UK) is headed by Mike Reynolds-Jones also Managing Director of Software Express although the two companies are totally separate. Initial releases will be for the ST but XLENT's existing 8-bit products will also be released together with new products including a low price word processor which has received very favourable comment in the States.

One of the aims of the UK company is to concentrate on software that is genuinely useful and that will allow Atari owners to use their computers in more productive ways. New products will only be announced when realistic release dates are known as the company's directors feel that too many products have been announced in the past by other companies which never reach the market. This serves only to frustrate users and retailers alike who seldom know what to believe. Three products for the ST have been announced (see ST News section) and other titles will be announced throughout the coming year.

ULTIMA IV PROBLEMS?

Dear Les,

It would appear that early copies of Ultima IV distributed by US GOLD in this country are faulty. If you can NEVER kill ANY enemy at all then it is because you have a bad copy. US Gold have now fixed the problem and will replace your copy if you send it to them (their address is on the packaging). If you know how to write bad sectors then you can fix it yourself by writing bad sectors into the fifteenth track. Check that it is full of hex zeroes first though!

There is also some doubt about their copies of QUESTRON. If you find that it drops into BASIC when you come out of a dungeon then please let US Gold know on 021 356 3388 so that they can track down the problem.

John Sweeney

PRINTER DRIVERS

Dear PAGE 6,

Could you please send me details of your public domain software collection. I am most interested in a printer driver mainly because I don't know what it is!

Fernand Paquet,
Belgium

Details are on their way. In case other readers are puzzled, a printer driver is a program that acts as an interpreter between a word processor or other program and a specific printer. If your printer has special features such as bold, enhanced, graphics etc. then these can be accessed easily by using a printer driver designed for that printer. Most word processors have printer drivers for the most popular printers built in but a few programs do not. Essentially what happens is that the program uses a code for special functions, underlining for example may use CTRL-U. The program will always use CTRL-U but not all printers use the same code for underlining. The printer driver checks each character sent to the printer and when it comes across an 'instruction' character such as CTRL-U it replaces it with whatever code your printer requires. This way it is possible for a particular program to work with every printer by simply adding or using different printer drivers.

WISHSONG BBS

Dear Sirs,

I was wondering if it would be possible for you to help me. I am trying to set up a BBS for Atari users. I know that in the past you have mentioned other BBS's and would be most grateful if you could mention mine in one of your columns.

It is called Wishsong, runs at 300/300 (V21) and can be reached by dialling 01 464 2516 between the hours of 20.00 – 08.00 7 days a week. It will be aimed mainly at Atari users to swap ideas, get problems answered, or just let them chat to each other.

Have you ever thought of having a BBS list in each of your issues, with a list of current systems that are online? This seems to be a growing area of interest for Atari owners.

Your help would be most appreciated and keep up the excellent work you do in PAGE 6.

Martin Wybold,
Bromley, Kent

One problem with printing details of BBS's and the like is keeping it up to date. I have an idea for a 'resource' page next year which would list all BBS's, User Groups and retailers supporting Atari. To work it requires all those concerned to provide me with details and for readers to let me know if they find any entries get out of date. If you want to get the ball rolling and run a BBS or User Group put the details on a sheet of paper clearly headed RESOURCE and send them to me. Ed.

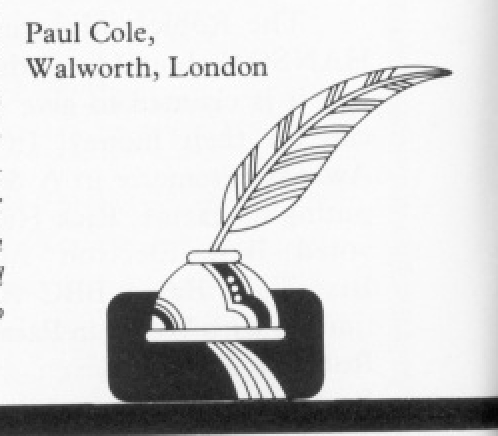
HACKER PROBLEMS?

Dear Les,

I purchased a copy of Hacker on tape and completed it last week. I think that there is a part of the game missing as the computer tries to load something else at the end. When I reach Washington with the document the game tells you to press RETURN to see tomorrow's headlines. The computer then beeps and the tape starts up but the screen just goes blank and the tape runs to the end.

I returned my copy to Activision for replacement but the same thing happens. Can any of your readers help? Is it the same on all copies or am I just unlucky?

Paul Cole,
Walworth, London



KEEP WRITING!

Dear PAGE 6,

I'm sure that there are a great deal of Atari owners who at one time or another have felt a bit envious of their friends who own other machines. Every month new games are released by British companies for the Commodore and Spectrum but the software houses rarely do a version for the Atari.

I see that a lot of budget titles have re-appeared in the charts after an Atari conversion has been made which surely proves that their is a market for Atari software if only the companies would bring out Atari versions. Elite did a conversion of Airwolf for the Atari but why stop there? Why don't they do Ghosts and Goblins and Paperboy as well? Surely there are not more C16's and PLUS 4's than Ataris?

The point I am trying to make is that Atari owners should write or telephone these companies and ask if, or rather when, the Atari version of the game is coming out. It is no good sitting back and waiting for someone else to ask otherwise nothing will happen. If every PAGE 6 reader wrote or rang up, I am sure that more companies would be doing conversions. If you don't know where to write here are some suggestions.

Ocean Software, *Ocean House, 6, Central Street, Manchester, M2 5NS. Tel. 061 832 6633. Games include Match Day, Daley Thompson, Miami Vice.*

Gremlin Graphics Software Ltd., *Alpha House, 10, Carver Street, Sheffield, S1 4FS. Tel. 0742 753423. Games include Monty Mole and Jack The Nipper.*

Elite Systems Ltd., *Anchor House, Anchor Road, Aldridge, Walsall, W. Midlands. Tel. 0922 59165. Games include Ghosts and Goblins, Commando, Paperboy and Bombjack.*

Melbourne House (Publishers) Ltd., *Melbourne House, 60, High Street, Hampton Wick, Kingston-upon-Thames, Surrey, KY1 4DB. Tel. 01 943 3911. Games include Exploding Fist, The Hobbit, Mugsy and Fist 2.*

Imagine Software (1984) Ltd., *Address the same as Ocean but omit Ocean House. Tel 061 834 3939. Games include Galvan, Green Beret and Yie Ar Kung Fu.*

Design Design Software, *125, Smedley Road, Cheetham Hill, Manchester, M8 7RS. Games include Nexor, Dark Star and*



Write to READERS WRITE, P.O. BOX 54, STAFFORD, ST16 1DR

Hall Of The Things.

All these companies have produced some great games, just think how much better they would be on an Atari! The Atari has the best graphics so we should have the best software but you don't get what you don't ask for.

All it will cost you to ask is a few pence.

Noel Wallace,
Wandsworth, London

This letter arrived BEFORE John Davison's letter in the last issue was published so it seems that there are more Atari owners who feel strongly about this. Show how you feel by getting out that pen and paper or making a call. There is no excuse!

FAMILY TREES

Dear Les,

My wife and I are compiling a family tree. As you can imagine we have accumulated a mass of information which is all in notebooks and on scraps of paper. To try and bring some order to it and present it in an easily accessible form we want to store it on disk. We are at present using Home Filing Manager but it is not really satisfactory. Once you have so much information it becomes difficult to present it in a way that makes it easy to follow through.

Is there a program available on disk either specifically for genealogy or a program more adaptable for this use?

Tony Barnes
Lymington, Hants

The ANTIC CATALOG do a program called The Family Tree written by Harry Koons which may be available from your local retailer or Software Express in Birmingham. The program is limited to 6 generations but up to 24 generations can be stored on one disk. There is another program available in America by post only (we do have the details somewhere but could not find them in time for this issue!) and also a group specialising in genealogy. Try writing to Genealogical Computing, 5102 Pomeroy Dr., Farfax, VA 22032, U.S.A. and they may be able to provide further help. If any PAGE 6 readers have written programs for genealogy or can provide further information I would be interested to know.

PRINTSHOP AND 1029

Dear Les,

You may have noticed that there were three pleas for help on using the 1029 with Printshop in a recent Contact column. I think that there is more than enough interest to warrant the printing of an answer in the magazine. I am shortly going to purchase a 1029 printer and Printshop and want to be sure they work.

I will also be buying a word processor. Can you tell me if Superscript supports microspacing and if Paperclip has user definable keys?

Gareth Martin
Dublin

The 1029 will not work with Printshop. I doubt whether a 1029 printer driver will ever be produced for it as the 1029 was never sold in the States and Printshop is a program with, primarily, a U.S. market. As regards word processing, I would firstly suggest that if you are interested in such refinements as microspacing, you get a much better printer than the 1029. Superscript does not support microspacing but Paperclip does providing your printer is capable of it. Paperclip does have user definable keys (macros) but they are not as powerful as Superscript. ●

BOUNCING BERT

Animation with page flipping

by Allan Knopp

The designers of the Atari range have given us a very flexible system. Graphics enthusiasts are particularly well catered for, and if there is one way that computer graphics are an improvement over pencil and paper it is in the ability to create a moving picture.

There are several wa·s in which it is possible to create movement, or at least the .llusion of movement, with the Atari. One method is page flipping. Put simply, page flipping consists of drawing all your graphics screens in memory during initialisation and then showing these screens one after another. Any one of the screens can be displayed, and because it is already in existence in memory there is absolutely no delay between pictures as there would be if the screen had to be drawn each time.

Page flipping is possible because the Atari has two pointers to screen memory. One of these pointers tells the Atari to take its display information from a particular section of memory. This is the pointer to 'read memory'. The other pointer tells the Atari which area of memory is to be written to if anything is typed, or a PLOT or DRAWTO command is issued. This is the pointer to 'write memory'. Normally both of these pointers direct the Atari to the same area of memory, so that whatever is written is simultaneously displayed. It is possible however to change both of these pointers from BASIC, so all that is necessary when setting up page flipping is to set the pointer to 'write memory' so that each screen is drawn in a selected area of memory.

When each screen is complete, reset the pointer to another area of memory and draw the next screen. Carry on with this until you have all your screens stored, then by setting the pointer to 'read memory' with the same value that was used when one of the previously saved screens was drawn, that screen will be instantly displayed. So you can see, in this way it is possible to store a series of screens, just like a series of frames in a film and by displaying them in sequence, full screen animation can be achieved.

THREE BASIC STEPS

There are three basic steps to implementing page flipping.

1. Ensure that the screens are positioned in memory so that they will not be overwritten by the program. Firstly reserve an area of memory. To do this first find the top of available memory by peeking location 106. Then POKE 106 with a value lower than the initial value which fools the system into thinking that the top of free memory is lower than it actually is. The screens can be safely stored above this location. The amount of memory which needs to be reserved depends on the number of screens you wish to store and the graphics mode (see Table 1). The higher resolution modes use a lot more memory for the screen display.

As an example the statement RAMTOP=PEEK(106):POKE 106,RAMTOP-4 will reserve four 256 byte pages(1K) of memory which is sufficient for one Graphics 0 screen.

2. Change the address of 'write memory' before the screen is drawn. The pointer is contained in memory locations 88 and 89, usually it is only necessary to change the value in location 89. If you have poked location 106 with RAMTOP-4 as in step 1, then the command POKE 89,RAMTOP-4 will store the screen in that reserved area of memory.

3. Having stored a screen, to display it just change the pointer to 'read memory'. This pointer is contained in the fourth and fifth bytes of the display list. First find the start of the display list with the statement DL=PEEK(560)+256*PEEK(561). Then DL+4 and DL+5 will contain the pointer. You will only usually need to alter the value in DL+5. All that is now needed is to poke DL+5 with the same value that was poked into location 89 when the screen was drawn, and the screen will appear. In this case this is done with the command POKE DL+5,RAMTOP-4.

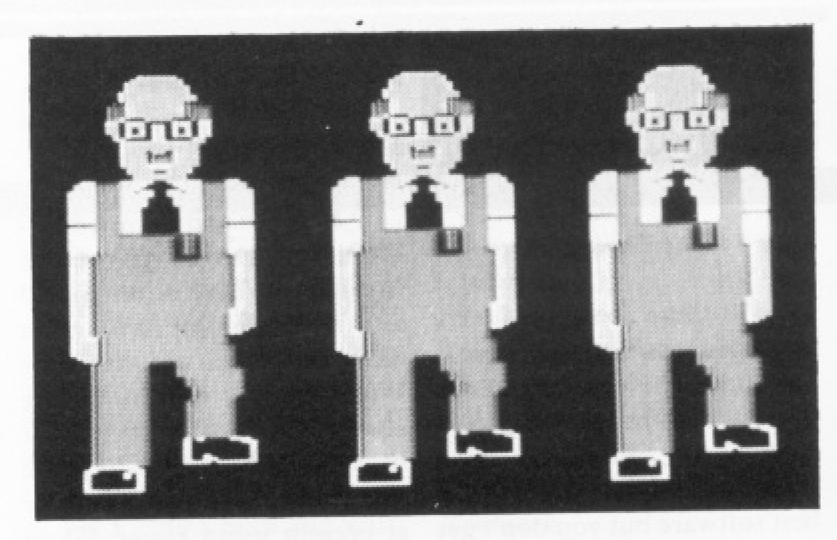


TABLE 1

GRAPHICS MODE	PAGES REQUIRED PER SCREEN	MAX NO. OF SCREENS
0 and 1	4	31
2 and 3	2	62
5	8	15
7	32	4
8 to 11	32	3

The number of screens which can be stored depends on the amount of RAM and the length of the program but the maximum available with 32271 bytes of free RAM is shown in the table.

BRING ON BERT!

Now that I have described the general principle of page flipping, I think it might be useful to see how it works in practice.

Program 1 demonstrates animation by page flipping. There are a total of eight screens which are displayed in a random sequence. Because of the memory requirements of the higher resolution modes the screens in this program are drawn using a redefined character set in Antic mode 4, which gives the same resolution as Graphics 7 but uses much less memory. In Graphics 7 it is only possible to have a maximum of four screens, whereas with Antic 4, which is essentially the same in terms of memory requirement as Graphics 0, it is possible to have thirty-one screens should you require them.

When the program is run it will prompt you to put a cassette containing music into your Atari program recorder and press PLAY. When initialisation is completed the music will play through the television speaker, causing the screens which were previously stored to flip, thus animating the picture. I have not blanked out the screen during initialisation so that you can see each screen as it is drawn. Initially you will only see the blocks of characters which will be redefined later by the routine which starts at line 335. The final screen is displayed while the character set is redefined.

Before each screen is drawn the program GOSUBS's to line 305. Lines 305 to 315 set up an Antic mode 4 screen. Line 320 sets aside an area of memory where the screen can be stored. This is done as previously described, with a poke to location 106. First it is poked with the initial value of RAMTOP (which is ascertained in line 175) minus TX which is initially set to 4, and then increased by 4 each time a screen is drawn. In this way we are setting aside 4 pages each time a screen is drawn. Line 325 tells the Atari to draw the screen in the area of memory we have just set aside, by poking location 89 with RAMTOP-TX. Then, so that we can see each screen as it is drawn, we also poke DL+5 with RAMTOP-TX thus telling the Atari to display that same section of memory.

When all the screens are drawn and the character set is redefined the program goes to the loop starting at line 140. Lines 140 and 145 set the variable DANCE to a random multiple of 4, within the range 4 to 36. Then DL+5 is poked with the value RAMTOP-DANCE in lines 155 and 160, telling the Atari to display those areas of memory selected by the pokes to location 89 in line 325.

RAPID TRANSITION

When the program is running you can see how rapid is the transition between one screen and the next. Clearly page flipping is a very powerful technique and with a little thought and planning some dynamic screen displays can be created. One point to remember is that if screen memory crosses a 4K boundary then the screen display will be disturbed. This is only a problem with the higher resolution graphics modes, but if you want to flip screens in Graphics 8,9,10, or 11 then take a look at program 2, which flips between two Graphics 8 screens. You will see from the listing how the address of 'read memory' is also set at DL+101 to point to the area of memory which is displayed in the bottom half of the screen. When the screens are drawn, press START or SELECT to

```
EI 1 REM ******************************
QG 2 REM *         BOUNCING BERT       *
TA 3 REM *                             *
NE 4 REM * Animation by Page Flipping  *
VU 5 REM *       by Allan Knopp        *
ED 6 REM * --------------------------- *
JA 7 REM *  PAGE 6 MAGAZINE - ENGLAND  *
EP 8 REM ******************************
QM 100 REM
TA 105 POKE 752,1:POKE 710,50
LU 110 ? "↖↖":? "***  PUT A MUSIC CASSETT
   E IN THE   ***"
FG 115 ? "***      RECORDER AND PRESS PLAY
        ***":? :? "INITIALIZATION TAKES ABO
   UT 30 SECONDS"
OC 120 FOR W=1 TO 1200:NEXT W:? "↖"
CT 125 DIM HEAD$(50),BODY$(120),LFTLEG1$(
   50),RTLEG1$(50),LFTLEG2$(50),RTLEG2$(5
   0):TX=4:GOTO 175
NE 130 POKE 756,CHI:POKE 708,130:POKE 709
   ,42:POKE 710,12:POKE 54018,52
SU 135 REM * DANCE *
VG 140 DANCE=INT(RND(0)*8)*4+4
TF 145 REM * LOCATIONS 53775,53791,53807
   WILL CHANGE WHEN SOUND IS PLAYED FROM
   CASSETTE THROUGH COMPUTER *
CM 150 A=PEEK(53775):B=PEEK(53791):C=PEEK
   (53807)
AE 155 IF A=127 AND B=127 THEN POKE DL+5,
   RAMTOP-DANCE
CX 160 IF B=255 AND C=255 THEN POKE DL+5,
   RAMTOP-DANCE
PW 165 GOTO 135
TT 170 REM * SETUP *
CA 175 RAMTOP=PEEK(106):POKE 106,RAMTOP-T
   X
```

▶

flip between the two. To see how the screen is split, change RAMTOP-48 in line 150 to RAMTOP-16, also change RAMTOP-16 in line 155 to RAMTOP-48, Then the bottom halves of the screens will be transposed.

FURTHER READING

The information contained in this article has been drawn from many sources including the following. If you need any more information I recommend that you try to get copies of them.

PAGE FLIPPING by David Plotkin – Antic, January 1984

TICTOCFLIP by Gene Levine – Antic, September 1985

PAGE FLIPPING ON THE ATARI by Clay Stuart – COMPUTE!, June 1985

DISPLAY LISTS by Steve Pedler – PAGE 6, Issues 18, 19 and 20

ANIMATION BY PAGE FLIPPING by David Plotkin – COMPUTE!'s SECOND BOOK OF ATARI GRAPHICS

MAPPING THE ATARI (Compute! Books) by Ian Chadwick

I hope I have explained page flipping clearly and accurately, and that you will have a go yourself. Of course animation is not the only use for page flipping. Any program where rapid switching between screens is required can benefit from the technique. ●

```
XP 180 HEAD$="!U#↓←←←←@ABCD↓←←←←←←♥├ ┡┤↓←←
   ←←←◆abcd"
YP 185 BODY$="%f&'(f)↓←←←←←←←←EfF HfI↓←←←←
   ←←←┐fff◢f▪↓←←←←←←←←efffff.↓←←←←←←←←effff
   f.↓←←←←←←←←"
UE 190 BODY$(LEN(BODY$)+1)="effffff.↓←←←←←
   ←←Jfffff N↓←←←←←←←←▄▌|  || └"
WY 195 LFTLEG1$="▄▌|↓←←←←▄▌|↓←←←←▄▌|↓←←←←uvw
   "
AI 200 LFTLEG2$="J↓←◣▌ ▘↓←←←←j| k↓←←←←O| Q↓←←←
   ▄▌|↓←←←opq"
EE 205 RTLEG1$="┤| └↓←←←┤| └↓←←←┤| └↓←←←←xyz"
GN 210 RTLEG2$="N↓←←←←┐ _↓←←←←M| n↓←←←←R| T↓←←
   ←┤ ●↓←←←rst"
UN 215 GOSUB 305
PG 220 FOR ZX=1 TO 30 STEP 10
XM 225 POSITION 7+ZX,4:? HEAD$:POSITION 5
   +ZX,8:? BODY$:POSITION 5+ZX,16:? LFTLE
   G1$:POSITION 9+ZX,16:? RTLEG1$:NEXT ZX
XA 230 REM * DRAW SCREENS *
PT 235 GOSUB 305:GOSUB 275:GOSUB 280:GOSU
   B 295
NQ 240 GOSUB 305:GOSUB 275:GOSUB 280:GOSU
   B 285
RB 245 GOSUB 305:GOSUB 275:GOSUB 290:GOSU
   B 295
OY 250 GOSUB 305:GOSUB 275:GOSUB 290:GOSU
   B 285
OH 255 GOSUB 305:GOSUB 275:GOSUB 280:GOSU
   B 285
IT 260 GOSUB 305:FOR ZX=1 TO 30 STEP 10:P
   OSITION 7+ZX,5:? HEAD$:POSITION 5+ZX,9
   :? BODY$:NEXT ZX:GOSUB 280:GOSUB 295
IY 265 GOSUB 305:FOR ZX=1 TO 30 STEP 10:P
   OSITION 7+ZX,5:? HEAD$:POSITION 5+ZX,9
   :? BODY$:NEXT ZX:GOSUB 290:GOSUB 285
DB 270 GOSUB 340:GOTO 130
OV 275 FOR ZX=1 TO 30 STEP 10:POSITION 7+
   ZX,4:? HEAD$:POSITION 5+ZX,8:? BODY$:N
   EXT ZX:RETURN
SM 280 FOR ZX=1 TO 30 STEP 10:POSITION 5+
   ZX,13:? LFTLEG2$:NEXT ZX:RETURN
PR 285 FOR ZX=1 TO 30 STEP 10:POSITION 11
   +ZX,13:? RTLEG2$:NEXT ZX:RETURN
VM 290 FOR ZX=1 TO 30 STEP 10:POSITION 5+
   ZX,16:? LFTLEG1$:NEXT ZX:RETURN
HH 295 FOR ZX=1 TO 30 STEP 10:POSITION 9+
   ZX,16:? RTLEG1$:NEXT ZX:RETURN
LY 300 REM * SET UP SCREEN *
CX 305 GRAPHICS 0:DL=PEEK(560)+256*PEEK(5
   61)
JH 310 POKE DL+3,68
XS 315 FOR X=6 TO 28:POKE DL+X,PEEK(DL+X)
   +2:NEXT X
PW 320 POKE 106,RAMTOP-TX:POKE 559,34
EV 325 POKE 89,RAMTOP-TX:POKE DL+5,RAMTOP
   -TX:TX=TX+4
ZF 330 RETURN
BG 335 REM * REDEFINE CHSET *
NU 340 CC=PEEK(106)-8:POKE 106,CC-1:CHSET
   =(PEEK(106)+1)*256
IR 345 CHI=CHSET/256:CLO=0:POKE 203,CLO:P
   OKE 204,CHI:POKE 756,CHI
WC 350 DIM XFR$(28):RESTORE 355:FOR N=1 T
   O 28:READ ML:XFR$(N,N)=CHR$(ML):NEXT N
NV 355 DATA 104,169,0,133,205,168,169,224
   ,133,206,177,205,145,203,200,208
SO 360 DATA 249,230,204,230,206,165,206,2
   01,228,208,239,96
KB 365 XFR=USR(ADR(XFR$))
XH 370 RESTORE 390
NL 375 READ A:IF A=-1 THEN RETURN
GN 380 FOR Z=0 TO 7:READ J:POKE CHSET+A*8
   +Z,J:NEXT Z
SO 385 GOTO 375
PQ 390 DATA 1,2,10,42,42,42,170,170,170
DI 395 DATA 2,170,170,170,170,170,170,170
   ,170
BE 400 DATA 3,128,160,160,168,168,168,170
   ,170
FU 405 DATA 5,15,63,63,255,255,255,255,25
   5
GR 410 DATA 6,255,255,252,243,255,255,255
   ,255
NA 415 DATA 7,195,0,0,195,195,0,0,0
GM 420 DATA 8,255,255,63,207,255,255,255,
   255
GE 425 DATA 9,240,252,252,255,255,255,255
   ,255
YG 430 DATA 10,169,169,169,169,169,169,16
   9,169
ZK 435 DATA 11,85,85,85,85,85,85,85,85
ZI 440 DATA 12,85,85,85,85,85,85,85,85
AI 445 DATA 13,85,85,85,85,85,85,85,85
ZQ 450 DATA 14,106,106,106,106,106,106,10
   6,106
RG 455 DATA 15,1,1,5,5,5,5,5,5
BH 460 DATA 17,84,84,84,84,80,80,80,80
CJ 465 DATA 18,21,21,21,21,5,5,5,5
PY 470 DATA 20,64,64,80,80,80,80,80,80
MI 475 DATA 32,1,5,5,5,5,5,10,10
AT 480 DATA 33,106,106,106,106,106,128,42
   ,42
RD 485 DATA 34,170,170,170,170,170,170,0,
   40
KE 490 DATA 35,165,165,165,165,165,1,168,
   168
VB 495 DATA 36,64,80,80,80,80,80,160,160
ZV 500 DATA 37,255,255,255,255,255,0,255,
   255
SA 505 DATA 38,252,252,252,252,252,252,25
   2,252
VX 510 DATA 40,63,63,63,63,63,63,63,63
YI 515 DATA 41,255,255,255,255,255,0,255,
   255
RJ 520 DATA 42,170,170,170,170,170,170,42
   ,10
KI 525 DATA 43,85,85,85,85,85,85,149,149
BH 530 DATA 44,85,85,85,85,85,85,85,85
FZ 535 DATA 45,85,85,85,85,85,86,86,86
RH 540 DATA 46,170,170,170,170,170,170,16
   8,160
FV 545 DATA 47,5,5,5,1,1,1,1,1
OE 550 DATA 49,80,80,80,84,84,84,84,84
XK 555 DATA 50,5,5,5,5,21,21,21,21
QE 560 DATA 51,0,0,0,0,0,0,0,0
BM 565 DATA 52,80,80,80,64,64,64,64,64
HS 570 DATA 53,170,170,170,170,170,170,17
   0,170
VX 575 DATA 64,10,10,2,2,0,0,0,0
HP 580 DATA 65,34,34,42,128,170,170,170,1
   70
AJ 585 DATA 66,40,40,40,40,170,170,170,40
KX 590 DATA 67,136,136,168,2,170,170,170,
   170
BH 595 DATA 68,160,160,160,128,128,0,0,0
PC 600 DATA 69,255,255,255,255,255,170,17
   0,169
BD 605 DATA 70,85,85,85,85,85,85,85,85
BB 610 DATA 71,85,85,85,85,85,85,85,85
PL 615 DATA 72,85,20,20,20,20,20,20,0
YL 620 DATA 73,255,255,255,255,255,170,17
   0,106
WY 625 DATA 74,0,0,0,1,1,1,1,1
CX 630 DATA 75,85,85,85,85,85,85,85,85
PL 635 DATA 76,65,65,65,65,65,65,65,65
DV 640 DATA 77,85,85,85,85,85,85,85,85
GP 645 DATA 78,0,0,0,64,64,64,64,64
AL 650 DATA 79,1,1,1,1,1,1,1,1
RL 655 DATA 80,0,0,0,0,0,0,0,0
UH 660 DATA 81,84,84,84,84,84,84,84,84
HH 665 DATA 82,21,21,21,21,21,21,21,21
SH 670 DATA 83,0,0,0,0,0,0,0,0
HT 675 DATA 84,64,64,64,64,64,64,64,64
ZJ 680 DATA 85,1,1,1,1,1,1,1,1
ER 685 DATA 86,85,85,85,85,85,85,85,85
XB 690 DATA 87,84,84,84,84,84,84,84,84
KB 695 DATA 88,21,21,21,21,21,21,21,21
EU 700 DATA 89,85,85,85,85,85,85,85,85
FY 705 DATA 90,64,64,64,64,64,64,64,64
RK 710 DATA 91,0,0,0,0,0,0,0,0
UC 715 DATA 96,0,0,0,0,0,0,0,0
PZ 720 DATA 97,170,170,170,170,42,42,10,1
   0
```

BOUNCING BERT

```
OM 725 DATA 98,85,85,85,170,170,130,170,1
   70
AI 730 DATA 99,170,170,170,170,168,168,16
   0,160
NC 735 DATA 100,0,0,0,0,0,0,0,0
FV 740 DATA 101,169,169,169,169,169,169,1
   69,169
RI 745 DATA 102,85,85,85,85,85,85,85,85
RH 750 DATA 103,85,85,85,85,85,85,85,85
SI 755 DATA 104,85,85,85,85,85,85,85,85
EP 760 DATA 105,106,106,106,106,106,106,1
   06,106
RU 765 DATA 106,1,1,5,5,5,5,5,5
OL 770 DATA 107,85,85,85,85,84,84,84,84
JK 775 DATA 109,85,85,85,85,85,21,21,21
GA 780 DATA 110,64,64,80,80,80,80,80,80
ZE 785 DATA 111,15,60,48,48,48,48,48,63
KI 790 DATA 112,240,0,0,0,0,3,15,243
MX 795 DATA 113,204,12,12,12,12,12,12,252
DM 800 DATA 114,51,48,48,48,48,48,48,63
DL 805 DATA 115,0,0,0,0,0,192,240,207
XZ 810 DATA 116,252,31,3,3,3,3,3,255
NH 815 DATA 117,3,15,12,12,12,12,12,15
BD 820 DATA 118,255,0,0,0,0,0,0,255
MT 825 DATA 119,240,60,204,204,12,12,12,2
   52
YF 830 DATA 120,15,60,48,48,48,48,48,63
DV 835 DATA 121,255,0,3,3,0,0,0,255
ER 840 DATA 122,192,240,48,48,48,48,48,24
   0
PL 845 DATA 123,0,0,0,0,0,0,0,0
GN 850 DATA -1
```

Listing 2

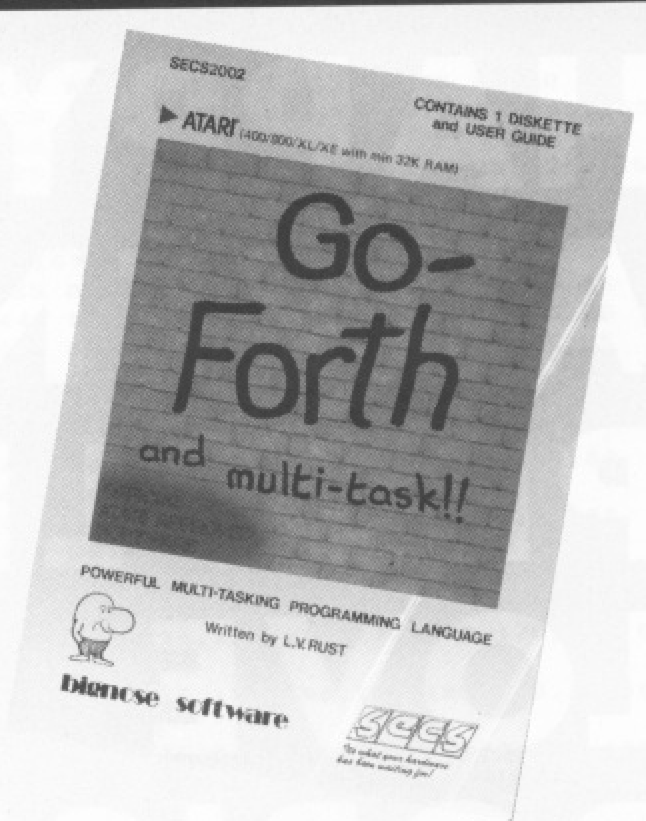
```
DW 100 REM *      GR.8 PAGE FLIPPING      *
           *        by Allan Knopp        *
           *     for PAGE 6 MAGAZINE      *
QP 101 REM
HW 105 RAMTOP=PEEK(106):POKE 89,RAMTOP-64
    :? CHR$(125):REM * CLEAR MEMORY *
XO 106 POKE 106,RAMTOP-64:REM *  RESERVE
   MEMORY   *
MV 110 GRAPHICS 8+16:POKE 710,0
EB 115 DL=PEEK(560)+256*PEEK(561):REM *--
   FIND START OF DISPLAY LIST *
AM 116 ? #6;CHR$(125)
PF 120 POKE 89,RAMTOP-63:REM * SET WRITE
   ADDRESS *
BG 125 POKE DL+5,RAMTOP-63:REM * SET THE
   DISPLAY ADDRESS FOR TOP HALF OF SCREEN
FV 130 POKE DL+101,RAMTOP-48:REM *    SET
   THE DISPLAY ADDRESS FOR BOTTOM HALF  *
MV 135 COLOR 1:FOR X=1 TO 144 STEP 5:PLOT
    X*2,0:DRAWTO 200-X,X:NEXT X:REM * PUT
   SOMETHING ON SCREEN 1 *
BK 140 POKE 89,RAMTOP-31:POKE DL+5,RAMTOP
   -31:POKE DL+101,RAMTOP-16:REM * --SET
   WRITE AND READ ADDRESSES FOR SCREEN 2
TW 145 COLOR 1:FOR X=1 TO 180 STEP 4:PLOT
    110,X:DRAWTO X,140:NEXT X:REM * -PUT
   SOMETHING ON SCREEN 2 *
GE 150 IF PEEK(53279)=6 THEN POKE DL+5,RA
   MTOP-63:POKE DL+101,RAMTOP-48:REM * IF
    START IS PRESSED DISPLAY SCREEN 1 *
CT 155 IF PEEK(53279)=5 THEN POKE DL+5,RA
   MTOP-31:POKE DL+101,RAMTOP-16:REM * IF
    SELECT IS PRESSED DISPLAY SCREEN 2 *
NV 160 GOTO 150
```

Review

GO-FORTH AND MULTI-TASK

Bignose Software/S.E.C.S.

£24.99



reviewed by Peter Coates

Unlike the new ST series, there is a very limited choice of languages available for the older 8-bit Atari computers. Indeed, the main alternative to using the slow and unstructured BASIC is to resort to the complexities of Assembler – an unenviable choice!

Although considerable interest has been shown in the Forth language, and introductory articles have appeared in most computer magazines, it is surprising that so few programmers appear to have been converted to it. Disk drives are essential, of course, and I would agree that it does take some effort to become familiar with its stack-based operation and the reverse Polish notation, but it is a fast, powerful language, and, once bitten, most users become Forth enthusiasts if not fanatics.

Most versions of Forth available for the Atari 8-bit computers in Britain have had some weaknesses or have been rather expensive. Go-Forth is a multi-tasking version, needing a minimum of 32k RAM, produced and marketed in the UK by S.E.C.S. Ltd. under licence from the quaintly-named Bignose Software. It is approved by Atari, claimed to provide features normally only found on mini- and main-frame computers, and is on sale at a very reasonable price (£25). To see if this represents good value, we must look at the facilities provided.

First, I should perhaps remind you that a Forth system consists of a dictionary of compiled 'words'. A word is similar to a sub-routine; it carries out a particular function, and several may be combined together and given a descriptive name to define a more complex function. You can execute any function simply by entering its name from the keyboard. The language is usually provided in the form of a Forth nucleus, which is the part read into the computer on booting up, from the disk supplied, and several 'electives', that is, sets of definitions of words you may choose to add to the nucleus in order to carry out specific tasks. The electives are stored on the disk in screens or blocks which can either be read into buffers in the computer for inspection and modification, or compiled directly into the dictionary.

The nucleus provided in Go-Forth follows reasonably closely the Forth-79 standard, so if you copy code obeying this standard from another source into your system, it should compile without serious difficulties. The differences from the 79 standard are listed in the User Guide provided. The only one which might cause problems is the absence of the variable STATE, which indicates whether the system should compile or execute immediately the code presented to it. There are ways round this, but you need to know exactly what you are doing.

The electives include not one but two editors. I found the screen editor, which behaves rather like a text editor, particularly effective for entering new definitions. The line editor is of the conventional fig-Forth form, and more suited to the modification of existing screens. The block size in Go-Forth is 512 bytes, so each screen consists of 16 lines of 32 characters. It is more usual to have a block size of 1024 bytes (16 lines of 64 characters), but the smaller size fits more efficiently on the Atari text screen.

If you are accustomed to 6502 machine code, you should have few problems with any Forth assembler, once you have adapted to the reverse notation. In fact, because high level control words such as IF .. ELSE .. THEN and BEGIN .. UNTIL are available, and you can break the code into small sections, each of which can be tested and debugged separately, assembler in Forth is actually rather easy. The Go-Forth assembler does not, however, make use of the check digit normally included to ensure that the control words are correctly paired. In my opinion, this is a definite weakness; the time saved while loading is minimal, and certain to be exceeded by that required in checking the code and finding the mistakes.

The debugging utilities allow new Forth words to be checked by stepping through the definition, with the contents of the stack and any important variables shown after each step. This is a much more useful facility than the de-compiling utility normally provided, which merely lists the words present in the definition. It would have saved me many hours of frustration and reams of paper in the past.

The multi-tasking routines are perhaps the most prominent feature of Go-Forth, and it's unusual to find these features on an 8-bit micro. Some tasks are provided; one (TYPIST) enables you to continue using the computer while printing out long documents or listings. Another (TICKER) gives a digital clock on the GR.0 text screen, and supplements other time and date routines available. Whether you find the ability to run simultaneous tasks to be of great value depends very much on your applications. It is particularly useful for controlling external equipment – a sophisticated domestic control and burglar alarm system, for example.

Other electives cover disk and IO operations, and sound and graphics. These on the whole correspond to the facilities available in BASIC. No attempt has been made to provide words to cover player-missile graphics and display list interrupts.

On the whole the package is neatly and effectively done. There are some minor points I didn't like; for example, the disk drives are, for no good reason, numbered 0 to 3 rather

than the usual 1 to 4. Also, no warning is given if you define a word with the same name as one already present. This can be corrected by re-vectoring CREATE, but I feel that a warning should be the default option. There are no floating point routines; although the purist might claim that they are undesirable in Forth, which predominantly uses integer and fixed point arithmetic, I have found them very useful on occasion.

The one serious failing in Go-Forth is the documentation provided. The reader is assumed to be 'a competent Forth programmer experienced in the use of a standard 6502 assembly language'. A very small fraction of the potential customers will meet these requirements. Even if you do, the 80-page user guide is not well written or well organised, and some sections are heavy going indeed. It also has its fair share of errors; even the procedure on page 2 for backing up the system disk is faulty (the store word '!' has been replaced by a degree symbol). For a beginner, a copy of Brodie's 'Starting Forth' or of Winfield's 'The Complete Forth' is absolutely essential. These will cover the fundamentals, of course, and not the functions specific to Go-Forth.

To sum up, then, I would say that this is a very good version of Forth for the Atari, with some really useful extensions, even if you don't make much use of the multi-tasking aspects. There are a few flaws which need correcting, and the documentation could be much improved; if you are a newcomer to Forth, you will certainly need an introductory text to get started. The price is very reasonable, and represents excellent value for money.

16. GRUDS IN SPACE and POWERSTAR

Okay space cadets. Don your space suits and check your oxygen tanks. This issue we're going for a trip around the solar system in not one, but TWO illustrated Adventures with a space theme.

The first is Gruds in Space. This is a collectors' item which deserves to be a classic and is featured this issue because of a request from a reader. The second is Powerstar. This has the unusual claim to fame of being the first and only Atari Adventure that has ever been released on cartridge – although I consider it more an example of 'state-of-the-art' gone wrong!

Anyway, fasten your seat belts and get ready for blastoff...

GRUDS IN SPACE

Gruds in Space follows the traditional format of the disk-based illustrated Adventure. It was written by Chuck Somerville and Joe Dudar and released by Sirius Software. If these names are unfamiliar to you, then there is probably a good reason for it. It appears that Gruds in Space was originally written for the Apple (hence the authors' lack of fame in the Atari world) and translated for the Atari a little over two years ago. It only had a limited exposure before Sirius Software went out of business somewhere around November 1984. When that happened, all Sirius Software's programs instantly disappeared from the marketplace.

I tried to buy a copy of Critical Mass (another Sirius Adventure), but without success. (If anybody's got a copy I'd love to hear from you.) Fortunately, I was more successful with Gruds in Space and found a discount mail order house in the U.S. that still had a copy.

Gruds in Space turned out to be an excellent game in every respect and had not suffered in the transition from the Apple (unlike quite a few other games on the market). It's a big game with lots of rooms, several clever twists to the story-line, a nice blend of easy and hard puzzles and great graphics. The graphics include simple animation like blinking eyes, flashing lights and twinkling stars in almost every scene. I realise it's a very rare game and few of you will ever have seen it, but if you ever see a copy, BUY IT! You won't be disappointed.

YOUR OWN SPACESHIP

The game itself starts aboard the privately owned spaceship USAC 9400. And you're the pilot! The instructions tell you very little about the game, but this is offset by a message received in the opening moves.

"...This is an urgent message to the pilot of the vessel USAC 9400 from USAC Command on Earth. Our battleships at the war front near Baranok have exhausted their fuel supply. The only cargo ship capable of returning for the fuel has also run out and is now stranded on Pluto. The fuel, Heliotropanite, is only available on Saturn. We believe that your ship is the only one in the solar system that can carry the fuel from Saturn to Pluto in time to prevent the defeat of our forces. We know that since your ship is privately owned, you cannot be ordered to accept the mission. We are prepared to reward you the sum of one million dollars on the completion of the mission..."

If you accept the mission, you may get your butt shot off. If you don't accept, you might as well remove the disk and turn the computer off! So what's it to be? One million dollars may sound like a pittance to the pilot of a privately owned spaceship, but it's better than nothing (and that's all you're earning at the moment). Obviously, you decide to head for Saturn.

Piloting your spaceship is remarkably simple. You just set the navigation coordinates and let the computer and the warp drive do the rest. The computer will tell you when you arrive and you can verify this by simply checking the navigation screen or looking out the window. You can then set the teleport coordinates and teleport down to the surface of the planet.

You will in fact do quite a lot of travelling throughout the game. It's essential that you get the coordinates right or you'll end up floating in free space – where death is just a few seconds away. I'd suggest you draw up a table to record the navigation coordinates and teleport coordinates of each destination as they are revealed to you during the game.

ENTER THE GRUDS

When you arrive at the mining camp on Saturn, you'll want to have a good look around. In doing so, you'll discover two things. Firstly, much of the mining camp is inaccessible to you for one reason or another. Secondly, the natives are far from hospitable. You see, Saturn is inhabited by Gruds and if there's one thing a Grud hates, it's a human. Before continuing, I should explain that a Grud is a short, fat alien with yellow/green skin, freckles and big ears. It was used as a company identification logo on all Sirius' products and

by Garry Francis

appeared in several of their games. For example, if you've played The Blade of Blackpoole, you may remember the idol of a Grud on the island in the lake.

If you expect to progress very far, you'll have to find a Grud who's willing to help you. Maybe one that's rich. One whose greed for money is stronger than his dislike of humans. One who has a butler!

You'll soon learn that Gruds are not unlike humans. If you want information, you'll have to pay for it! In this case, your services are wanted more than your money. You'll have to deliver a note to someone on Venus and return with a counterfeiting machine. Sounds simple enough, but it turns out to be more than you bargained for.

By the time you return to Saturn, you should have collected enough items to allow further exploration of the mining camp, including a trip into the caves and a trip beyond the locked gate in search of the Arler. The Arler is a strange character. Your first confrontation with him will probably be a violent one, but he's really quite timid. You need only do him a favour to gain his confidence. A trip to the Arler's temple should put you on the right track.

At around this point, you'll be ready to visit the unmanned alien ship which is orbiting Venus. In order to fully explore the ship, you'll have to solve a real brain twister of a puzzle. This one's a beauty. I could best describe it as the sort of puzzle that you'd expect to find in Infocom's Zork or Enchanter trilogies.

Once back at Saturn, you may manage to find the fuel, but in doing so you create another twist in the story-line. This one entails another trip to Venus, then to Titan. If all goes well, you'll have the pleasure of blowing up a Baranok ship before eventually delivering the fuel to Pluto. Then it's back to Earth for a million dollars and a pat on the back for a job well done. Whew!

HINTS

Coded hints for Gruds in Space are included with this article. To use the hints, just look for the area where you're stuck and match the numbers with the accompanying list of words to create a hint. If you're still having trouble, you'll find a full solution in 'The Book of Adventure Games' by Kim Schuette (Arrays, Inc.).

POWERSTAR

Technically speaking, Powerstar is one of the most innovative Adventures to come along in a long time. Pandora Software have managed to cram the whole Adventure into a 16k cartridge! The biggest advantages of this are that it is simple to use (no need to muck about with backups of copy protected disks), it boots instantly and there are no lengthy pauses for disk access during the game. The biggest disadvantages are that the graphics are terrible and the vocabulary is too limited to allow for an enjoyable game.

Powerstar uses a split screen format with graphics at the top and text at the bottom. The graphics data for the various rooms has been compressed (to save memory) by defining individual elements such as tables, chairs, beds, windows, gratings, robots, etc. In this way, a room can be drawn by (say) starting with an empty room and adding a table, two chairs and a window at pre-defined positions. Each room is made to look unique by using different combinations of the individual elements and using different colours.

The graphics appear to be done in GRAPHICS 10. This allows up to nine colours on the screen (without display list interrupts), but because of its odd-shaped pixel, the pictures look rather 'chunky'. As the colours are very gaudy, I'd have preferred to see fewer colours and better resolution, but that's just nit-picking. It has no effect on the play of the game.

The text is Atari's default white on boring blue. This always has a negative effect, but there are other aspects that are more annoying. The text is allocated to a much larger area than is necessary (about half the screen) and is cleared after every move. In addition, the program's vocabulary is far too limited. Playing the game becomes a frustrating exercise in guessing the right word, rather than solving puzzles. In fact, in almost three years of writing this column, this is the first game that I've featured and haven't actually finished! And I blame it on the poor vocabulary. More about this later. The only point I'll emphasise here is that it doesn't matter how technically innovative a game is if it's no fun to play!

ABOARD THE POWERSTAR

Powerstar takes place in the 21st century when all electrical power in the U.S. is generated by a single nuclear reactor aboard an orbiting space station called (you guessed it) the Powerstar. It seems that the Powerstar's one man crew has had a bad bout of cabin fever. The only message from him in the last week was a fax of the label from a bottle of Jack Daniels. As the alternative engineer for the Powerstar, it is your job to save the space station from this nut before he does any damage.

The Adventure begins at a government field station somewhere on the U.S. coastline. Your spaceship stands waiting on the airfield behind you, but it won't start without the key. While you're searching for the key, you might as well have a good look around to see if there's anything else of interest. Movement is achieved using the traditional N, S, E and W, but you can also use the cursor keys or even a joystick! As you move about, you'll discover that each room generally has four views – one for each of the cardinal compass directions. Thus the first rule for the successful completion of Powerstar is to make sure that you turn 360 degrees in every room! If you don't, you'll very likely miss something.

Once you've collected all your goodies from the field station, you can take to the skies in your spaceship. Mapping the sky is a real pain. It's like a maze, but the four pictures for each room really add to the confusion. Read the room descriptions very carefully and you'll see that they're all unique. Your spaceship cannot climb above 100000 feet without the correct fuel, but that'll be no problem if you remembered to fill 'er up before you took off. (You DID remember, didn't you?)

Once in orbit, you'll find yourself in another maze. This time you're surrounded only by stars and have no distinguishing landmarks to guide you. Be persistent. It IS mappable and before long you'll find yourself in the docking bay of the Powerstar.

THE ADVENTURE BEGINS

Here is where the real Adventure begins. IF you can get out of the landing bay and IF you can pass the various doors and other obstacles and IF you can map the whole

continued overleaf

mess, you'll find that the Powerstar is a miniature version of the classic torus-shaped space station made famous by Stanley Kubrick's '2001: A Space Odyssey'. Imagine it as a spoked wheel. The docking bay is the hub at the centre of the wheel. Nearby are ladders extending down the spokes to the rim of the wheel. If you continue heading north (or south) around the rim, you will eventually arrive back where you started from. Keep this in mind when drawing your map.

The space station is full of obstacles to prevent you finding your way around. As you gradually overcome these obstacles, more and more of the station will become accessible to you. When you find the telescreen room, a face flashes up on the screen and a voice booms out from a loudspeaker. "I now have control of this space station. The nuclear reactor will be destroyed. There is nothing you can do to stop it. Go back to your ship and go away now."

Oh boy, as though you weren't having enough trouble, now you have to find a bomb as well! If you stick with it, you'll eventually find the bomb and if you're particularly clever, you'll also discover a way to destroy it without destroying the space station. Before you can celebrate your success, another loudspeaker comes to life. "I have left the station in a shuttle. You have failed to stop me. I cut the main reactor controls and the nuclear reactor will run away and blow the Powerstar out of the sky." Aaaaargh! The loony crewman always seems to be one step ahead. What now?

You discover that the crewman has dropped an amulet during his flight. On the back of the amulet is the word AMUZOZ. Hmm...

BACK TO EARTH

At this point, I was stumped. I decided to fly back to Earth and discovered that I was able to enter a previously inaccessible room. This turned out to be the emergency control room of the Powerstar. On the control panel was a keyswitch. When I turned it on, the equipment came to life and a voice said 'Enter password'. The only thing I'd encountered that resembled a password was AMUZOZ, but no matter how I expressed it, the program would not respond. Talk about frustrating! I blamed the program's poor vocabulary for this, but maybe that's not the problem. Was I on the right track? Is AMUZOZ the password? Have I done something wrong somewhere? Would someone please help me out!

HINTS

It would be unfair of me to try and supply hints for a game that I haven't finished as I might tell you the wrong thing. My apologies to anyone who is inconvenienced by this. If you're really desperate, I believe a hint sheet for Powerstar is available from Pandora Software at the address in the instructions.

COMING UP

I eventually finished Asylum, but this is such a HUGE game that I think I'll save it for the next Adventure special issue. That should give you all plenty of time to try and solve it for yourselves. In the meantime, I'd like a bit of feedback on a question of ethics. I'd like to publish the map for Asylum. Do you think this is the right thing to do or is it unethical? Please let me know what you think.

Next issue, I may take a look at one or two Adventures from Level 9, but then again I might not. It all depends on what comes up between now and then.

If you have any special requests, questions, criticisms, etc., please feel free to contact me at the address below. However, if you expect a reply to your letter, please include a couple of international reply coupons to cover the return postage. Merry Christmas to you all and may Santa bring you some beaut new Adventures for the New Year.

Garry Francis, 26 Baringa Road, Earlwood, N.S.W. 2206, Australia

●

Garry Francis' ADVENTURE HINTS

GRUDS IN SPACE

Spaceship:

1. Don't know what to do?
17 57 30 54 28

2. Can't get to Saturn?
23 5 54 24

3. Can't use the teleport?
23 5 54 21 10 56 21

Saturn:

4. Can't enter the guarded cave entrances?
52 42

5. Can't get the rope?
32 40 10 44 22

6. Can't see in the caves?
12 35

7. Can't buy any supplies?
12 33

8. Can't enter the Gruds' houses?
8

9. Can't enter the barracks?
8

10. Can't enter Lord Deebo's?
2 45

11. Can't read Deebo's note?
46 40 3 57

12. Can't open the gate?
12 51

13. Can't descend the pit in the caves without getting killed?
20 34 3 9

14. Can't see the significance of the green square in the cave?
36 57 19

15. Can't get past the large bat?
38 40

16. Can't unlock the chest?
12 51

17. Can't see the significance of the temple?
12 49 19 10 46 40 3 14

18. Can't stop the Arler from throwing rocks at you?
38 14

19. Can't get past the force field?
36 49 19

20. Can't lift the rock?
23 5 54 16

21. Can't get the heliotropanite?
37 11

22. Can't read the Arler's note?
46 40 3 48

Alien Ship:

23. Can't open the doors in the alien ship?
36 19 47 15 13 31 7

24. Can't find the blue and white orb?
52 42

Venus:

25. Can't cross the river of bubbling lava?
52 42

26. Can't get past the Venusian?
38 40

27. Missing a gun?
27

28. Can't get out of the swamp?
20 34 3 55 29 50

29. Mr. Green shoots you?
36 26

30. Can't cross the river on the second trip?
23 5

31. Still can't cross the river?
38 55

32. Can't find Mr. Green on the second trip?
41 43 54 55

33. Can't revive Mr. Green?
37 1 39

Titan:

34. Can't find it?
46 53 58 14 3 48

Baranok Ship:

35. Can't escape from the Baranok guards?
52 42

Pluto:

36. Can't find it?
17 57 30 54 28 4 18 6

Earth:

37. Can't find it?
17 57 30 54 28 4 25 6

1	OXYGEN	11	H-CONTAINER	21	TELEPORT	31	AS	41	INSERT	51	KEY
2	PAY	12	FIND	22	AWAY	32	STEAL	42	BAD	52	TOO
3	TO	13	COLOUR	23	TYPE	33	MONEY	43	CARD	53	NOTE
4	AFTER	14	ARLER	24	NAVIGATION	34	ROPE	44	RUN	54	IN
5	HELP	15	SAME	25	DELIVERING	35	FLASHLIGHT	45	BUTLER	55	TREE
6	FUEL	16	CAFETERIA	26	GUN	36	DROP	46	GIVE	56	GO
7	SQUARE	17	PRESS	27	SWAMP	37	BUY	47	OF	57	GREEN
8	KNOCK	18	FINDING	28	COMMUNICATIONS	38	SHOOT	48	DEEBO	58	FROM
9	STALAGMITE	19	ORB	29	NEXT	39	MASK	49	BLACK		
10	AND	20	TIE	30	BUTTON	40	IT	50	TIME		

Steve Pedler discovers just how all that data is stored on your disks

DISKS

Although knowledge of the structure of files stored on disk is not necessary in order to use a disk drive, the subject is an interesting one and information about it is essential if you wish to carry out certain tasks such as repairing damaged files or creating boot programs. The following article examines the structure of various types of disk file, and in the second part of the article I will present a sector editor enabling you to directly read and write to disk sectors.

All references to DOS and disk drives in the article relate to the current Atari standard of 1050 drive and DOS 2.5, unless stated otherwise.

THE DISK ITSELF.

A floppy disk consists of a thin, circular piece of plastic coated with metal oxides which store the data in magnetic form. As initially supplied the disk is not usable, and the surface must first be organised to store data, by a process known as formatting. The surface of a formatted disk is

divided into 40 concentric tracks. Each track is in turn divided into 18 (single density) or 26 (enhanced density) sectors, each of which holds 128 bytes of data. Data is therefore packed rather more closely onto an enhanced density disk, which means that the disk surface must be of higher quality to ensure reliable storage. In fact, the only difference between disks designated by the manufacturer as single or double density is that one has been tested for higher quality. Prior to formatting the drive cannot distinguish between them. It is important to use a quality disk as formatting a disk designated as single density with DOS option I will automatically result in an enhanced density format, which might lead to unreliable data storage. To specifically format a disk in single density, use DOS option P.

Once the disk is formatted, the 1050 (but not the 810) drive can distinguish between single and enhanced density and use the disk accordingly. The 810 drive can use a single density disk formatted on a 1050, but not an enhanced density one. Note that DOS 2.0S can read an enhanced density disk in a 1050 drive, but sectors numbered 720 or greater are invisible to it and files using these sectors will be unavailable.

SECTOR NUMBERS

From the figures above you will see that theoretically a single density disk contains 720 sectors (40 tracks * 18 sectors per track = 720 sectors) and an enhanced density disk contains 1040 sectors. Examination of a freshly formatted disk (not containing DOS files) shows however that you only have 707 or 1010 free sectors respectively. What happened to all those missing sectors?

On a single density disk, as part of the format process, eight sectors (361-368) are reserved for the disk directory and a further sector (360) for the Volume Table of Contents (VTOC). The structure and use of these sectors is described below. Three more sectors (1-3) are reserved for the DOS file manager boot file (see below). Finally, one sector is lost due a discrepancy between the original version of DOS and the original disk drives. As far as the drive is concerned, the 720 sectors on the disk are numbered from 1 to 720, but DOS numbers them from 0-719. The result is that sector 720 just does not exist as far as DOS is concerned. No doubt this could have been corrected with later versions of DOS, but then there would have been a loss of compatibility between the various versions. Anyway, this makes a total of 13 unavailable sectors, leaving 707 free for use. (Note that these sectors are only unavailable within the confines of DOS – you can use any of them in any way you like by bypassing DOS and doing direct sector-oriented disk access.)

Although 1040 sectors are present on an enhanced density disk, due to the file link structure DOS 2.5 cannot use sector numbers greater than 1023. The reason for this will become apparent when discussing linked sector files below. Of the 1023 sectors available, 12 are reserved for the directory, VTOC, and DOS boot file as above. Although sectors numbered 720 or above can be used by DOS 2.5, to ensure maximum compatibility with DOS 2.0S sector 720 is marked as unavailable. This leaves 1010 sectors free for use.

THE DIRECTORY.

The directory consists of eight sectors starting at sector 361. These were chosen because they are in the middle of a single density disk and therefore give the shortest average disk access time. Each directory entry is 16 bytes long, giving eight entries per sector and a total of 64 entries. The 16 bytes of each entry are used as follows:

Byte 1 Flag or status byte. The various bits in this byte, if set, have the following meanings:

bit 0 – special meaning for DOS 2.5 – see below
bit 1 – file created by DOS 2 (if this bit is clear, it is a DOS 1 file)
bits 2 -4 – spare
bit 5 – file is locked
bit 6 – entry in use (i.e. not that the file is OPEN, but that this directory entry is valid and cannot be used for a new file)
bit 7 – file has been deleted

In most publications the setting of bit 0 of the status byte is said to indicate that the file is OPEN. However, under DOS 2.5 if this bit is set it appears to indicate that the file uses sectors numbered 721 or greater, this file therefore being unavailable to DOS 2.0S. When doing a directory read, DOS 2.5 will bracket these files to indicate this to the user. Such files have the value 3 in the directory entry status byte. (Not 67 as you might expect from the list of bit values above. If you deliberately change the value from 3 to 67 using a sector editor, the file will no longer appear when the directory is read.) The status byte can therefore contain the following values:

value (decimal)	meaning
3	DOS 2.5 file using sectors numbered 721 or more
35	as above, but file locked
66	DOS 2 file, entry in use
98	as above, but file locked
128	file deleted

When a file is deleted, bit 7 of the flag byte is set (and all other bits cleared) but the filename is not removed from the directory. The file data itself is not erased, but the sectors used by the file are marked in the VTOC as being available for use again (see below). Under certain conditions it may be possible to recover a deleted file (e.g. using the DOS 2.5 utility DISKFIX.COM), but probably not if another file has been written to the disk since the old one was deleted. The new file may have used the directory space and sectors occupied by the deleted file, making recovery impossible.

Bytes 2 and 3	total number of sectors used by the file in low and high byte format.
Bytes 4 and 5	sector number of the first sector in the file, again in low and high byte format.
Bytes 6 – 13	primary filename. If this directory space has never been used, this area contains only zeroes.
Bytes 14 – 16	filename extension (or zeroes).

Normally, when you do a directory read you only get the filename and sector count, plus an asterisk marker if the file is locked. To get the rest of the information in the directory entry, you will need to use a sector reader which bypasses DOS and reads in the entire sector. From BASIC the directory is usually read using a statement such as: OPEN #1,6 0,"D:*.*". However, DOS 2.5 can use sector numbers greater than 720, which would not be usable by DOS 2.0S. If

continued overleaf

you use the following statement: OPEN #1,7,0,"D:*.*", DOS will bracket any file using sector numbers of 720 or more (e.g. as <FILENAME.EXT>).

THE VTOC

This is located in sector 360 (single density) or sectors 360 and 1024 (enhanced density). As indicated above, two VTOC sectors are necessary for an enhanced density disk as one sector is insufficient to store information about all 1023 sectors. Its purpose is to provide a map of which sectors are being used to store files and which are currently free to be used in a new file. The first five bytes of sector 360 contain miscellaneous information:

Byte 0 directory type byte. According to the OS User's Manual, this should always be zero, but appears to be set to 2 under DOS 2.5 and DOS 2.0S.
Bytes 1 and 2 total sector count (in low and high byte format) on the disk available to DOS. Should equal 707 for single density and 1010 for enhanced density.
Bytes 3 and 4 free sector count. This is the number of currently available (free) sectors up to a maximum of 707. It is therefore the same number that appears at the end of a directory read as 'xxx FREE SECTORS' on a single density (but not an enhanced density) disk. On an enhanced density disk, the number of additional free sectors is stored in bytes 122 and 123 of sector 1024.

Starting at byte 10 of sector 360 is the sector use bitmap. Each byte in the map contains the in-use status of eight sectors, one bit per sector. On a single density disk, the map continues to byte 99 of sector 360, but one sector is insufficient to map all the sectors on an enhanced density disk and so sector 1024 is used as well. Each byte is used as shown:

Byte 10	bit	7	6	5	4	3	2	1	0
	sector	0	1	2	3	4	5	6	7
Byte 11	bit	7	6	5	4	3	2	1	0
	sector	8	9	10	11	12	13	14	15

If a bit is clear, the sector is in use; if set, it is available for a new file. Note that sector zero, although present in the map, does not exist (see above). The map continues as shown above to byte 99 of sector 360, bit 0 (the rightmost bit) of which represents sector 719. It should be noted that even on an enhanced density disk the map finishes here, and no more bytes of this sector are used. On such a disk, the bitmap in sector 1024 starts at byte 0 (not byte 10 as in sector 360). Bit 7 (the leftmost bit) of byte 0 represents sector 48. The bitmap continues to byte 121, bit 0 of this byte representing sector 1023. Bytes 122 and 123 store the number of currently available free sectors in addition to those stored in bytes 3 and 4 of sector 360. In other words, a freshly formatted enhanced density disk (without DOS files) will have a total of 1010 free sectors. This number is stored in bytes 1 and 2 of sector 360 and will remain unchanged. Bytes 3 and 4 of sector 360 will contain the number 707, and bytes 122 and 123 of sector 1024 the number 303 (707 + 303 = 1010). These numbers will be updated as files are saved and deleted.

Because the bitmap in sector 1024 starts at sector 48, there is a considerable amount of overlap between the two VTOC sectors. Both sectors will need to be examined to get the free sector count on a directory read, and both may need to be updated when a file is written to disk. This presumably accounts for the considerable amount of drive head movement with this version of DOS, which did not happen with DOS 2.0S or DOS 3.

DISK FILE STRUCTURE.

After all the above (necessary) preliminaries, let us now look at the structure of files stored on disk. Generally speaking, there are two main types of file. These are firstly, files created and maintained by the disk file manager (linked or chained sector files) and secondly boot program files.

CHAINED SECTOR FILES.

These are the commonest type of file and examples include those created by BASIC SAVE or LIST commands, the Binary Save option from DOS, word processor text output, assembler object files and so on. With this type of file, only the first 125 bytes (bytes 0 – 124) of each sector contain file data. The remaining three bytes contain the file link data, which is stored in the following way:

Byte 125 the most significant six bits of this byte contain the file number, which corresponds to the position of the filename in the directory, and will be in the range 0 – 63. The remaining two bits (bits 0 and 1) plus the whole of byte 126 make up the 'forward pointer'.
Byte 126 this byte plus two bits from byte 125 is the forward pointer, and contains the sector number of the next sector in the file. Bit 1 of byte 125 is therefore the most significant bit of the pointer. 10 bits of pointer can only store a maximum number of 1023 in binary form and this is why the sectors numbered from 1024 to 1040 on an enhanced density disk are unavailable to DOS 2.5. The same amount of pointer was also used on DOS 3, but note that just one extra bit of pointer would have allowed a true double density disk drive! Presumably Atari did not do this when developing the 1050 and DOS 3 in order to maintain compatibility with previous versions of DOS. However, DOS 3 when produced was totally incompatible with DOS 2.0S for other reasons!
Byte 127 this byte contains the actual number of data bytes stored in this sector. For all but the last sector in the file, this should be 125. The last sector might contain 125 bytes, but this won't happen unless the file length is an exact multiple of 125.

From this you can see that the disk file manager finds the first sector of a file from the directory. 125 bytes of data are loaded from that sector and loading continues from the sector specified in the link data. This process is repeated until the forward pointer reads zero, which indicates that this is the last sector in the file. As each sector is loaded, DOS checks that the file number (stored in byte 125) is the same as the file entry position in the directory. If the numbers differ, loading stops and error 164 (File Number Mismatch) is returned. Although this may seem a complex process, it does have the advantage that files do not need to be stored in a string of consecutive sectors, but can be scattered around the disk if necessary, depending on the availability of storage space.

There are two special cases of this kind of file we should consider. Binary files are machine code programs created by the Binary Save option of DOS (which saves a specified area of memory to disk) or the object code output from an assembler. The first six bytes of any such file are known as the file header, and have this format:

Bytes 0 and 1 – both set to 255 (hex $FF). This is an

identifier for a binary file.
Bytes 2 and 3 – the start address in low and high byte format.
Bytes 4 and 5 – the end address, again in low and high byte format.

When you select DOS option L (Binary Load) the start and end addresses are obtained from the first six bytes of the first sector of the file, and the program itself loaded into memory, beginning at the load address and continuing until the end address is loaded. The Binary Save option of DOS allows you to specify optional initialization and run addresses. If present, these are appended to the end of the file. On loading the file, the initialization address will be loaded into locations 738 and 739 (INITAD) and the run address into locations 736 and 737 (RUNAD). On completing the load, control is passed back to the DOS menu if neither of these addresses have been specified. If an initialization address is present, DOS performs a machine language JSR instruction to the address contained in INITAD. The code specified here should end with an RTS instruction to return control to DOS. If a run address is specified, DOS will then JSR to this. Either or both (or neither) of these addresses may be used. Note that they do not need to point to code within the loaded program – they could be used to call operating system routines for example, or pass control to BASIC. An AUTORUN.SYS file is simply a special case of a binary file. After DOS is booted on powerup, it will look for a file named AUTORUN.SYS on the disk and load and run it if present. To autorun, the file must have either an initialization or run address appended.

The second 'special case' is that of a file created by the BASIC SAVE command. A BASIC program is stored in memory in tokenised form, whereby the BASIC keywords and variable names are represented by one byte tokens rather than their full ATASCII form. This has the advantage of saving considerable amounts of memory, but means that BASIC must maintain lists of variable names and their current values so that it knows which token represents which variable. Logically enough, these are called the variable name and variable value tables. When a BASIC SAVE is made, the program is saved in tokenised form and the above tables must be saved with it. In fact, a series of zero page pointers and several blocks of memory are also saved, including the following:

1) zero page pointers:

locations	name	function
128,129	LOMEM	pointer to the lowest memory location usable by BASIC
130,131	VNTP	pointer to the beginning of the variable name table
132,133	VNTD	pointer to the end of the variable name table
134,135	VVTP	pointer to the beginning of the variable value table
136,137	STMTAB	pointer to the beginning of the tokenised program
138,139	STMCUR	pointer to the token in a program line currently being processed, either during input of a line or when the program is run
140,141	STARP	pointer to the beginning of the string and array storage area, and therefore to the end of the program

These seven pointers are saved to disk in the order shown, but before doing so one change is made – the value in LOMEM is subtracted from each one and the resulting value saved. Since LOMEM itself is saved first, this means that the first two bytes of the file are always zero.

2) sections of the tokenised program:

This comprises the following blocks of memory in this order:

the variable name table
the variable value table
the tokenised program
the immediate mode line

Note that the string/array storage area is not saved, as all strings and arrays are redimensioned each time the program is run.

When a BASIC LOAD is made, the seven pointers are read in first, and the value in MEMLO (locations 743,744 – the operating system pointer to the bottom of free memory) is added to each one. The values in two more zero page pointers, RUNSTK (142,143 – pointer to a software stack used by BASIC in processing GOSUB statements and FOR...NEXT loops) and MEMTOP (144,145 – pointer to the top of memory used by BASIC, including the string/array area) are set to the value in STARP. Next, 256 bytes directly above the value in LOMEM are reserved as an output buffer used when BASIC is tokenising a line. Finally, the variable tables and the tokenised program are read in to memory immediately following the output buffer.

BOOT PROGRAM FILES

These are machine code programs which are loaded into memory and run (if desired) by the operating system at powerup. Unlike the binary files discussed previously they do not require DOS to be present in memory or on the disk in order to be loaded or run, nor do they need the presence of BASIC or any other language. The file structure therefore differs fundamentally from chained sector files. Because DOS is not used, sector chaining is not needed and boot program sectors contain 128 bytes of program data and no link data. The operating system boot loader routine always attempts to load boot files at powerup starting at sector 1 of drive 1, meaning that generally speaking there can only be one boot file per disk and this must consist of a consecutive string of sectors beginning at sector 1. These files do not require a directory entry, and sector usage need not be indicated in the VTOC. There is an important exception to these rules, discussed below. As with the binary files discussed earlier, these files contain a six byte header. The six bytes are used as follows:

Byte 0 – flags byte. This is not generally used and is usually zero.
Byte 1 – number of sectors to be loaded, including the first sector. This can range from 1 – 255. If it is zero, 256 sectors will be loaded. What if the file is longer than 256 sectors? See below for the explanation.
Bytes 2 and 3 – the load address. The file is read into memory starting at this address.
Bytes 4 and 5 – the initialization address.

What exactly happens during the boot process? The procedure is described in considerable detail in De Re Atari

continued overleaf

or the Operating System User's Manual, but the following is a brief outline. Cassette users should note that the process is essentially similar for the cassette boot process.

As part of the powerup routine, the operating system (OS) checks to see if a cartridge is present (or built-in BASIC enabled). If so, the cartridge's 'Allow disk boot' flag is checked, to determine if the cartridge software permits the disk to be booted (as it would in the case of BASIC or other languages, but not in most games). Providing a disk boot is allowed, or if no cartridge is present and BASIC is disabled, the boot process goes ahead.

Assuming drive 1 is switched on, the OS will attempt to read sector 1 into memory. If it cannot do so – if no disk is in the drive for example – the boot process is aborted and the message 'BOOT ERROR' written to the screen. If all is well, the 128 bytes in sector 1 are read into a specified area of RAM (the cassette buffer in fact). The first six bytes (the header) are described above. The values in these bytes are then moved to the following locations:

Byte 0 to location 576 (DFLAGS)
Byte 1 to 577 (DBSECT)
Bytes 2 and 3 to 578,579 (BOOTAD)
Bytes 4 and 5 to 12,13 (DOSINI).

The entire sector (including the header) is then moved to the area of memory beginning at the address now present in BOOTAD. The remaining sectors are then read from disk directly into the memory area following the first sector.

When the load is complete, the OS performs a JSR to the address contained in BOOTAD, + 6 (i.e. to the first byte of the actual program).This part of the program need not do anything, but if the file was longer than 256 sectors any remaining sectors should be loaded by the part of the program contained here. This part of the program should end by clearing the 6502 carry flag to indicate a successful load (even if no further sectors were loaded) or set the carry flag if the load was unsuccessful. It must terminate with an RTS.

The OS will next JSR to the address in DOSINI for program initialization. Again, this section need do nothing, if so desired. It must end with an RTS. However, if the booted program is at some stage to take control of the computer, this section of the program should store the run (or 'restart') address of the program into locations 10 and 11 (DOSVEC). If this is not to be the case, DOSVEC should be left unchanged. On powerup, DOSVEC is set to point to the memopad (400/800) or self-test (XL/XE) routines. If DOS is booted, it will change DOSVEC to point to the routine to load the DOS menu. BASIC will jump through DOSVEC when you type the keyword DOS, and this explains why, if you call DOS when it has not been booted, you go into the self-test/memopad routine.

Finally, the OS will pass control to the cartridge software (or BASIC) if present. If both BASIC and cartridges are absent, the OS passes control directly to the booted program by jumping through DOSVEC. Booting DOS without a cartridge or BASIC will therefore go straight to the DOS menu; powering up the machine without cartridge or disk boot and with BASIC disabled will proceed to the memopad/selftest routine. Note that whenever the Reset button is pressed, at the end of the warmstart process the OS will carry out the final two steps described above.

One special case of booted software is that of DOS itself. Although DOS is booted into memory on powerup, it actually consists of two separate files – the three boot sectors (1-3) and the file DOS.SYS. On powerup, the OS reads in the boot sectors and these will in turn load DOS.SYS. This has the advantage that DOS.SYS can be located anywhere on the disk, and can be deleted if required. Otherwise, a string of 40 consecutive sectors would have to be permanently reserved for it, even if you did not want DOS on a particular disk. However, this does mean that sector 1 takes on a slightly different format. The six byte header is the same as before, but the three bytes following the header are a JMP instruction to the code which loads in DOS.SYS. Following these three bytes, there are a series of data bytes needed by DOS. The use of these bytes and their (usual) value is as follows (bytes 0 – 5 are the file header):

byte	usual value	function
0	0	flagbyte
1	3	number of sectors to load
2,3	0,7	load address for the three boot sectors
4,5	64,21	initialization address
6,7,8	76,20,7	JMP instruction to bypass the data bytes (JMP $0714)
9	3	maximum number of simultaneously open disk files (you can have open files to other devices as well). Each open file is allocated a 128 byte buffer. You can increase this number to a maximum of seven, but you will lose 128 bytes for every additional buffer.
10	3	drive numbers supported – in this case drives 1 and 2. Up to four drives can be supported, and each drive is represented by one bit in this byte (bit 0 = drive 1, bit 1 = drive 2 and so on). Again, this byte can be altered to add more drives to your system.
11	0	buffer allocation direction (no, I don't know what it means either, but apparently it should always be zero).
12,13	204,25	boot image end address + 1
14	1	if zero, it means that the file DOS.SYS is not present on the disk. A nonzero value means that it is.
15,16	4,0	starting sector of the file DOS.SYS in low and high byte format.
17,18,19	125,203,4	I am uncertain of the use of these bytes.

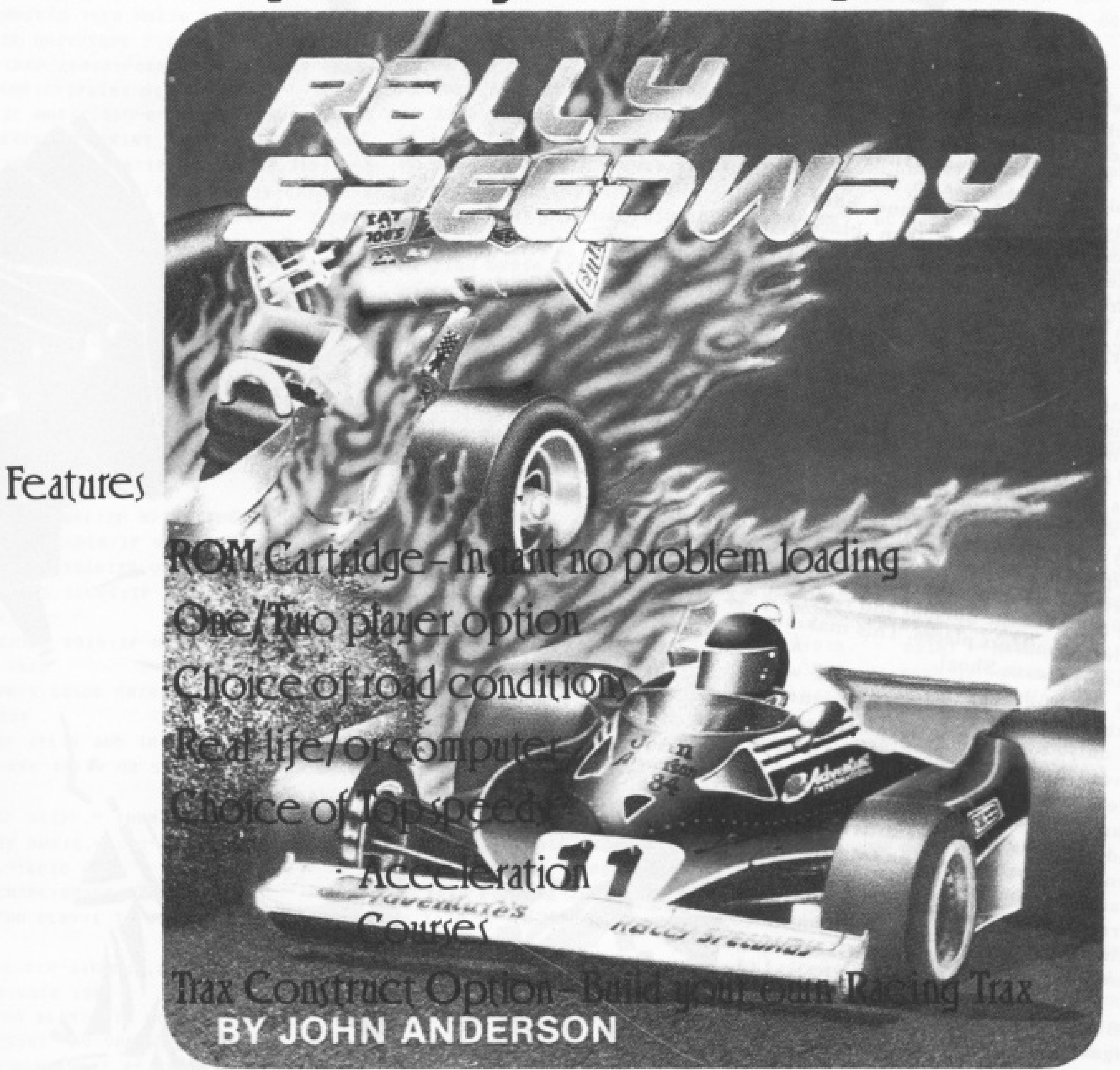
Note that the value of some of these bytes may vary from the above depending on disk configuration and customisation of DOS. The Disk File Manager (three boot sectors and the file DOS.SYS) form an exception to the usual rules for boot programs. Although DOS.SYS acts to all intents and purposes as a boot file, it has a directory entry, its sectors are marked as 'in use' in the VTOC and it has a linked sector structure. The initial three boot sectors however are a conventional boot file with the slight variation to sector 1 described above.

And that just about completes our discussion of Atari disk file structure! In order that you may learn a little more about disk files, I have written a simple sector editor but that will have to wait for the next issue. See you then! ●

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SHOGI

SHOGI is the smallest of the Japanese versions of the game Chess. The game was developed from the same roots as chess and therefore has many similarities but also major differences.

The board is a 9 × 9 square and is uniformly coloured, making diagonal attacks harder to see. The pieces are traditionally made of wood and have Japanese characters carved in them, then black lacquer applied to make the characters stand out. The pieces are of uniform colour, wedge shaped and pointed at the front to denote ownership, your pieces pointing towards your opponent and his pointing to you.

The program has what I hope are complete instructions with simple diagrams to explain the moves so I won't go into too many details here. Captured pieces may be returned to the board as part of your forces, which is why they possess no identifying colour. All pieces, except the King and Gold, may be promoted when they make all or part of their move in your opponents setup area. When promoted the pieces are turned over to reveal different characters. All the character's must be learnt in the normal and reversed positions i.e. for your opponents pieces. This makes it harder for westerners to learn Shogi.

The two sides are called Black and White with Black movi.g up the board and starting each game. In Shogi sets, often only the Black King possesses the extra spot as shown in the program and the player drawing this piece starts the game.

There are many different styles of characters used on the pieces and sets may therefore differ from the characters shown in the program. The set I have is a pocket version and the characters for the promoted pieces do not correspond to those used in the program. The designs of characters and the understanding of the rules of the game came mainly from SHOGI magazine published by THE SHOGI ASSOCIATION Ltd., P.O.BOX 77, BROMLEY, KENT and GAMES AND PUZZLES magazine issue No.24 May 1974. All the magazines I have are before 1979 and I do not know if the Shogi Association still exists, but if anybody wishes to know more about Shogi and the other versions of Japanese Chess it would be worthwhile trying to contact this organisation.

The program allows two players to play Shogi with the computer checking move legality, giving a description of the move played and checking for check. The program will only allow legal moves. It does not check for checkmate since this would be too time consuming but if you cannot get out of check by entering a move then obviously you have been checkmated.

The moves are entered using algebraic notation the letters and numbers reversed from normal Chess notation. Sample games are included in the program to help aid learning the game. They are all taken from Japanese championship tournaments and extended where necessary so that the games end in checkmate.

Before typing in the sample game lines POKE 82,0 to make them fit into the computer's standard line. The moves will then line up into neat columns.

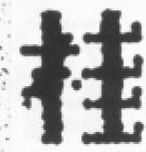


by Malcolm Allison



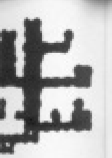


```
EI 1 REM ******************************
MG 2 REM *          SHOGI             *
KU 3 REM *    by MALCOLM ALLISON      *
EB 4 REM * -------------------------- *
IY 5 REM *  PAGE 6 MAGAZINE - ENGLAND  *
EN 6 REM ******************************
NM 7 REM
MM 10 GOSUB 10010
DG 90 REM  INPUT MOVE
JJ 100 POKE 752,1:U=INT(((Z-1)/5)/2)+1:IF
   PM=1 THEN PRINT U;". ";:INPUT MV$:IF
  LEN(MV$)<5 THEN MV$(5,5)=" "
JI 110 IF MV$="SAVE " THEN GOTO 12010
II 120 TRAP 16060:POKE 77,0:IF PM=2 THEN
  MV$=GM$(Z):PRINT U;". ";MV$
AX 130 IF MV$(1,1)="R" AND LEN(MV$)=1 THE
  N GM$(Z)="R":PRINT "RESIGNS":GOTO 400
KU 140 TRAP 16000:S=10-VAL(MV$(3,3))+(ASC
  (MV$(4,4))-64)*10:S$=BD$(S,S):CH=PL*-1
UZ 150 IF MV$(2,2)="*" AND S$<>" " THEN G
  OTO 16020
DX 160 IF MV$(2,2)="*" AND S$=" " THEN GO
  SUB 2010:IF V=0 THEN GOTO 16020
XG 170 IF MV$(2,2)="*" THEN GOTO 240
ZG 180 R=10-VAL(MV$(1,1))+(ASC(MV$(2,2))-
  64)*10:R$=BD$(R,R)
KY 190 IF R$=" " OR R$="*" OR (PL=1 AND A
  SC(R$)>128) OR (PL=-1 AND ASC(R$)<128)
   THEN GOTO 16000
HB 200 IF S$<>" " AND ABS(ASC(R$)-ASC(S$)
  )<70 THEN GOTO 16000
FX 210 H=ASC(R$):IF H>128 THEN H=H-128
GO 220 GOSUB 1010:IF V=0 THEN GOTO 16000
HM 230 GOSUB 3010:IF V=0 THEN GOTO 16000
GQ 240 BD$(S,S)=R$:IF MV$(2,2)<>"*" THEN
  BD$(R,R)=" "
UL 250 GOSUB 8010:IF MV$(2,2)<>"*" THEN G
  OSUB 4010
TO 260 PR=5:GOSUB 5010:G=H:IF H>128 THEN
   H=H-128
OG 270 IF (PL=1 AND (R<40 OR S<40)) OR (P
  L=-1 AND (R>70 OR S>70)) THEN GOSUB 60
  10
PV 280 IF S$<>" " THEN GOSUB 7010
LB 290 IF MV$(5,5)="=" THEN PRINT " CHECK
  MATE.":GOTO 400
SD 300 CH=PL:GOSUB 3010
JM 310 FOR DLAY=1 TO 300:NEXT DLAY:? :? :
  ? :?
SO 320 PL=PL*-1:GM$(Z,Z+4)=MV$:Z=Z+5:GOSU
  B 500:GOTO 100
RD 400 FOR DLAY=1 TO 500:NEXT DLAY
LF 410 PRINT "DO YOU WISH TO SAVE THE GAM
  E. (Y/N)":INPUT A$:IF A$<>"Y" AND A$<>
  "N" THEN GOTO 410
WF 420 IF A$="Y" THEN GOTO 12010
NZ 430 END
MK 500 C=1:IF PL=-1 THEN C=0
EO 510 FOR Y=149 TO 153:COLOR C:PLOT 70,Y
  :DRAWTO 74,Y:NEXT Y:C=ABS(C-1)
SO 520 FOR Y=0 TO 4:COLOR C:PLOT 70,Y:DRA
  WTO 74,Y:NEXT Y:RETURN
EB 1000 REM  CHECK FOR LEGAL MOVE
GC 1010 V=0:RESTORE 9500+H:READ B
TB 1020 FOR A=1 TO B:READ C
VR 1030 IF R-S=C*PL THEN V=1:POP :RETURN
BR 1040 NEXT A
WZ 1050 IF H<>66 AND H<>98 AND H<>76 AND
  H<>82 AND H<>114 THEN RETURN
OO 1100 RESTORE 9500+H:READ B
DO 1110 IF H=98 OR H=114 THEN B=4
UZ 1120 FOR A=1 TO B:READ E
XM 1130 C=ABS(INT((R-S)/E)):IF C<>0 THEN
  IF (R-S)/(C*PL)=E AND C<9 THEN V=1:F=E
  :A=B
BT 1140 NEXT A
ZN 1150 IF V=0 THEN RETURN
OL 1160 F=ABS(F):IF R>S THEN F=-F
NX 1170 FOR A=R+F TO S-F STEP F
FJ 1180 IF BD$(A,A)<>" " THEN V=0
DQ 1190 NEXT A:RETURN
CW 2000 REM  CHECK FOR LEGAL DROP
ML 2010 V=1:H=ASC(MV$(1,1)):D=(S/10-INT(S
  /10))*10:E=21:IF PL=-1 THEN H=H+128:E=
  1
BX 2020 IF PL=1 AND ((H=80 OR H=76) AND S
  <20) OR (H=78 AND S<30) THEN V=0
HH 2030 IF PL=-1 AND ((H=208 OR H=204) AN
  D S>90) OR (H=206 AND S>80) THEN V=0
LK 2040 IF H=80 OR H=208 THEN FOR K=D+10
  TO D+90 STEP 10:IF CHR$(H)=BD$(K,K) TH
  EN V=0
PG 2050 IF H=80 OR H=208 THEN NEXT K
ZP 2060 IF V=0 THEN RETURN
FE 2070 FOR L=E+19 TO E STEP -1
MN 2080 IF DR$(L,L)=CHR$(H) THEN R$=CHR$(
  H):V=1:A=L:L=E
ZR 2090 NEXT L:GOSUB 3010:IF V=0 THEN RET
  URN
PZ 2100 DR$(A,A)=" "
RW 2110 B=A-1:X=16*B-INT(B/4)*60-4*INT(B/
  4)
QW 2120 Y=INT(B/4)*15:GOSUB 4030:RETURN
XY 3000 REM  CHECK FOR CHECK
ET 3010 V=1:DBD$=BD$:DBD$(S,S)=R$:IF MV$(
  2,2)<>"*" THEN DBD$(R,R)=" "
UU 3020 IF CH=-1 THEN FOR N=99 TO 11 STEP
   -1:W=ASC(DBD$(N,N)):IF W=75 THEN K=N:
  N=11
XU 3030 IF CH=1 THEN FOR N=11 TO 99:W=ASC
  (DBD$(N,N)):IF W=203 THEN K=N:N=99
HG 3040 NEXT N
FB 3050 TXT$="+11-11+9 -9 +10-10+1 -1 +19
  +21-19-21"
ZD 3060 FOR B=1 TO 36 STEP 3:F=VAL(TXT$(B
  ,B+2)):C=1
TK 3070 FOR N=K+F TO F*8+K STEP F:IF N<11
   OR N>99 THEN POP :GOTO 3200
DJ 3080 IF DBD$(N,N)=" " THEN GOTO 3190
YU 3090 H=ASC(DBD$(N,N)):G=H:IF H>128 THE
  N H=H-128
UP 3100 IF DBD$(N,N)="*" OR ABS(G-W)<70 T
  HEN POP :GOTO 3200
YV 3110 RESTORE 9500+H:READ L
GF 3120 FOR M=1 TO L:READ E
DH 3130 IF (N-K)/(C*CH)=E AND C=1 THEN GO
  SUB 3500
OY 3140 IF (N-K)/(C*CH)=E AND M<5 AND C>1
   AND (H=66 OR H=76 OR H=82 OR H=98 OR
  H=114) THEN GOSUB 3500
HK 3180 NEXT M:N=F*8+K
JR 3190 C=C+1:NEXT N
DE 3200 NEXT B:RETURN
UL 3500 IF CH<>PL THEN PRINT " YOU ARE IN
  ";:V=0
AJ 3510 PRINT " CHECK."
EN 3520 M=L:N=F*8+K:B=36:RETURN
PU 4000 REM  REMOVE PIECE
SG 4010 B=INT(R/10)*10:C=R-B
DP 4020 X=81+(C-1)*16:Y=2+(B-10)*1.7
PS 4030 COLOR 0:FOR B=0 TO 13:PLOT X,Y+B:
  DRAWTO X+13,Y+B:NEXT B:RETURN
GD 5000 REM  DRAW PIECE
CD 5010 K=0:M=0:N=0:IF PR=5 THEN B=INT(S/
  10)*10:C=S-B:K=128:M=1:N=592
MR 5020 U=PEEK(89)*256+PEEK(88)-N
NY 5030 IF PR=5 THEN X=U+C*2+B*68:H=ASC(B
  D$(S,S))
DP 5040 IF PR=7 THEN B=A-1:X=U+(INT(B/4))
  *600+2*(B-4*INT(B/4)):H=ASC(DR$(A,A))
SK 5050 RESTORE 9000+H:READ TXT$
DP 5060 FOR B=1 TO 14
TM 5070 U=ASC(TXT$(B))-48:D=PC(U)
WS 5080 POKE X,D+K
CC 5090 U=ASC(TXT$(B+14))-48:D=PC(U)
HF 5100 POKE X+1,D+M
QE 5110 X=X+40:NEXT B:RETURN
XQ 6000 REM  PROMOTE PIECE
SL 6010 IF MV$(2,2)="*" OR H=71 OR H=75 O
  R H>83 THEN RETURN
MF 6020 IF MV$(5,5)="+" THEN A$="Y":PRINT
   " PROMOTES.":GOTO 6070
NX 6030 PRINT "DO YOU WISH TO PROMOTE THE
   PIECE.(Y/N)";
BG 6040 INPUT A$:IF A$<>"Y" AND A$<>"N" T
  HEN GOTO 6020
XB 6050 IF A$="N" AND (PL=1 AND ((G=80 OR
   G=76) AND S<20) OR (G=78 AND S<30)) T
  HEN GOTO 16040
DH 6060 IF A$="N" AND (PL=-1 AND ((G=208
  OR G=204) AND S>90) OR (G=206 AND S>80
  )) THEN GOTO 16040
VY 6070 IF A$="Y" THEN BD$(S,S)=CHR$(ASC(
  BD$(S,S))+32):R$=BD$(S,S):MV$(5,5)="+"
  :PR=5:GOSUB 5010
BC 6080 RETURN
FK 7000 REM  DRAW CAPTURED PIECE
UN 7010 E=1:IF PL=1 THEN E=21
XZ 7020 F=ASC(S$)-PL*128:IF (F>90 AND F<1
  28) OR F>218 THEN F=F-32
YX 7030 FOR L=E TO E+19
DL 7040 IF DR$(L,L)=" " THEN DR$(L,L)=CHR
  $(F):A=L:L=E+19
IK 7050 NEXT L:PR=7:GOSUB 5010:RETURN
XH 8000 REM  PRINT MOVE DESCRIPTION
IF 8010 M=ASC(BD$(S,S)):IF M>128 THEN M=M
  -128
CI 8020 RESTORE 8000+M:READ TXT$:PRINT TX
  T$;:M=ASC(S$):IF M>128 THEN M=M-128
ZB 8030 IF S$<>" " THEN PRINT " CAPTURES
  ";:RESTORE 8000+M:READ TXT$:PRINT TXT$
PA 8040 IF S$=" " AND MV$(2,2)<>"*" THEN
  PRINT " MOVES TO ";MV$(3,4)
QZ 8050 IF MV$(2,2)="*" THEN PRINT " DROP
  S ON ";MV$(3,4)
AY 8060 RETURN
TC 8066 DATA BISHOP
AH 8071 DATA GOLD
DA 8075 DATA KING
LO 8076 DATA LANCE
SN 8078 DATA KNIGHT
JB 8080 DATA PAWN
LB 8082 DATA ROOK
ZO 8083 DATA SILVER
WB 8098 DATA PROMOTED BISHOP
FN 8108 DATA PROMOTED LANCE
SZ 8110 DATA PROMOTED KNIGHT
NL 8112 DATA PROMOTED PAWN
RE 8114 DATA PROMOTED ROOK
GZ 8115 DATA PROMOTED SILVER
TO 9000 REM  PIECE DATA
MB 9010 RESTORE 9010
GB 9020 FOR A=0 TO 74:READ B:PC(A)=B:NEXT
   A:RETURN
BG 9030 DATA 0,1,2,3,5,6,8,9,12,13,14,15,
  16,17,19,21,22,23,24,25,27,28,29,30,31
  ,33,35,44,45,47,48,49,51,52,53,54,55
BI 9040 DATA 56,57,58,60,61,63,64,92,96,1
  04,108,112,120,128,132,136,140,144,152
  ,156,160,168,172
PY 9050 DATA 176,180,184,188,192,196,200,
  204,216,232,236,240,244,248,252
DR 9066 DATA 005;EYM8;8;8BN000puhzszsz8XE
GB 9071 DATA 001358H01H794Z00bp]Nyhjwilrz
NL 9075 DATA 000H1111H1111Z00Bybbbgybilez
FD 9076 DATA 000H1Z9CZ8;8;800]wdzlgzUwNwN
UB 9078 DATA 0088:Z8GFXK88800NQzNQzNQzNQz
ZB 9080 DATA 0019999Z17DI;X00bfwbezbdkzb0
PW 9082 DATA 000Z4HY9Z999C000pu_lohxmnmhe
UL 9083 DATA @0CYTJYCYDZCZP00gygygyrknwhB
XB 9098 DATA 00;8;8;8;6?5500Nwpwpwqz\ksoE
HT 9108 DATA E00H1Z9CZ8;8;8+0]wdzlgzUwNwN
VG 9110 DATA E088:Z8GFXK888+0NQzNQzNQzNQz
ZF 9112 DATA 002333333588;3000000Nwb000ww
```





```
YZ 9114 DATA 001;5Z0HCHCH1100iw^z0ygygycz
XB 9115 DATA E0CYTJYCYDZCZP*0gygygyrknwhB
TQ 9194 DATA UXNZPZPZVA30008BNwNwNxoUw]00
TT 9199 DATA Z>94;?VH853100zilfybeyN]pb00
OU 9203 DATA Z0111HC111HB00zbbbbybbbby000
CE 9204 DATA 8;8;EZC9Z=;500NwNwNzglzby000
UG 9206 DATA ZK8ZK8ZK8ZK800NNNQXnaNz*NN00
FL 9208 DATA 01ZR=1Z01;7100Xwctfbz1111b00
OD 9210 DATA OVLFLMVY95A300egl11zloyiz000
KU 9211 DATA BV;FR>HCHCHC00szgztogoqvog00
UG 9226 DATA UYPRWZJ;3;3;800__j<wNwNwNw00
OD 9236 DATA 8;8;EZC9Z=;50:NwNwNzglzby00U
GF 9238 DATA ZK8ZK8ZK8ZK80:NNNQXnaNz*NN0U
KS 9240 DATA ;;0001;8000000pwNN]pppppp[00
CW 9242 DATA ZIHCHCH0Z@;400bbygygy0z]wb00
WT 9243 DATA BV;FR>HCHCHC0:szgztogoqvog0U
EN 9500 REM  MOVE DATA 
LB 9566 DATA 4,11,9,-9,-11
EV 9571 DATA 6,11,10,9,1,-1,-10
ZO 9575 DATA 8,11,10,9,1,-1,-9,-10,-11
EI 9576 DATA 1,10
UX 9578 DATA 2,21,19
DN 9580 DATA 1,10
YM 9582 DATA 4,10,1,-1,-10
SG 9583 DATA 5,11,10,9,-9,-11
WZ 9598 DATA 8,11,9,-9,-11,10,1,-1,-10
FE 9608 DATA 6,11,10,9,1,-1,-10
EB 9610 DATA 6,11,10,9,1,-1,-10
EJ 9612 DATA 6,11,10,9,1,-1,-10
DV 9614 DATA 8,10,1,-1,-10,11,9,-9,-11
EV 9615 DATA 6,11,10,9,1,-1,-10
TR 10000 REM  SETUP BOARD 
NE 10010 DIM PC(74),BD$(100),DBD$(100),MV
   $(5),DR$(40),TXT$(36),A$(8),R$(1),S$(1
   ),GM$(1000),G$(250):GOSUB 11000
FR 10020 BD$="**********LNSGKGSNL* R
   B *PPPPPPPPP*          *          *
        *PPPPPPPPP* B      R *LNSGKGSNL*"
FN 10030 DR$="
                 ":PL=1:Z=1
JP 10040 GRAPHICS 8:SETCOLOR 1,0,15:SETCO
   LOR 2,0,0:SETCOLOR 4,0,0:COLOR 1
RR 10050 DATA 35.5,0,SHOGI,5.5,153,987654
   321,34.5,5,ABCDEFGHI,37.5,20,KRBGSLNP
IZ 10060 S=PEEK(89)*256+PEEK(88):RESTORE
   10050
LL 10070 FOR A=1 TO 4:READ X,Y,TXT$
BL 10080 FOR B=1 TO LEN(TXT$)
EB 10090 R=S+Y*40+X:D=ASC(TXT$(B,B)):D=D-
   32:E=PEEK(756)*256:E=E+D*8
OD 10100 FOR C=0 TO 7:POKE R+C*40+X,PEEK(
   E+C):NEXT C
CX 10110 R=R+1:IF A<3 THEN X=X+1
SW 10120 IF A>2 THEN Y_Y+17
GG 10130 NEXT B:NEXT A
YT 10140 FOR A=0 TO 159 STEP 17:PLOT 79,A
   :DRAWTO 224,A:NEXT A
PQ 10150 FOR A=0 TO 144 STEP 16:PLOT A+79
   ,0:DRAWTO A+79,153:PLOT A+80,0:DRAWTO
   A+80,153:NEXT A
YO 10160 PLOT 244,12:DRAWTO 319,12:PLOT 2
   44,0:DRAWTO 244,159:PLOT 245,0:DRAWTO
   245,159
CW 10200 REM  PRINT KEY TO PIECES 
YM 10210 GOSUB 9010:G$="KRBGSLNPrbslnp":X
   =PEEK(89)*256+PEEK(88)+712:T=X:K=0:M=0
KB 10220 FOR A=1 TO 14:IF A=11 THEN X=X+7
   20
RU 10230 IF A=9 THEN X=T+645
MP 10240 H=ASC(G$(A,A))
DY 10250 GOSUB 5050:X=X+120:NEXT A:PR=5
NO 10300 REM  DRAW PIECES 
YQ 10310 FOR S=11 TO 99:IF BD$(S,S)<>" "
   AND BD$(S,S)<>"*" THEN GOSUB 5010
VN 10320 NEXT S:PR=7
VQ 10330 FOR A=1 TO 40:IF DR$(A,A)<>" " T
   HEN GOSUB 5010
KO 10340 NEXT A:GOSUB 500:? :RETURN
IC 11000 REM  PLAY MODE 
SJ 11005 GRAPHICS 0:DL=PEEK(560)+256*PEEK
   (561):POKE DL+3,71:POKE DL+6,6
NR 11010 POKE 82,2:SETCOLOR 1,2,15:SETCOL
   OR 2,12,4:SETCOLOR 4,0,0:? "     SHOGI
   "
GN 11020 ? "↓↓  DO YOU WISH TO":?
OR 11030 PRINT "1. REPLAY GAME NO.1.":?
SP 11040 PRINT "2. REPLAY GAME NO.2.":?
VI 11045 PRINT "3. REPLAY GAME NO.3.":?
SY 11050 PRINT "4. ENTER A PREVIOUSLY SAV
   ED GAME.":?
BW 11055 PRINT "5. REPLAY A PREVIOUSLY SA
   VED GAME.":?
TX 11060 PRINT "6. PLAY A NEW GAME.":?
UA 11070 PRINT "7. GAME INSTRUCTIONS.":?
HB 11080 INPUT S$:IF ASC(S$)<49 OR ASC(S$
   )>55 THEN GOTO 11010
DV 11090 PM=1:IF VAL(S$)<4 THEN GOSUB 200
   10+(VAL(S$)-1)*100:PM=2
OI 11100 IF S$="4" THEN GOSUB 13010
YI 11110 IF S$="5" THEN PM=2:GOSUB 13010
MU 11120 IF S$="7" THEN GOSUB 14010:GOTO
   11010
DO 11130 RETURN
WU 12000 REM  SAVE GAME 
NF 12010 GRAPHICS 0:TRAP 12010:CLOSE #1
EY 12020 PRINT "K   CASSETTE OR DISK  (C/
   D)":? :INPUT R$:IF R$<>"C" AND R$<>"D"
    THEN GOTO 12020
EN 12030 IF R$="D" THEN PRINT "K  ENTER G
   AME FILE NAME. (NO EXT.) ":? :INPUT A$
XD 12040 TXT$(1,2)="D:":TXT$(3)=A$:TXT$(L
   EN(TXT$)+1)=".DAT":IF R$="C" THEN TXT$
   ="C:"
PW 12050 PRINT "K   WAIT UNTIL DATA IS SA
   VED. ":?
QM 12060 OPEN #1,8,0,TXT$
IL 12070 B=INT(LEN(GM$)/250):? #1;B
QE 12080 FOR A=1 TO B+1:G$=GM$:? #1;G$
DS 12090 IF A<=B THEN GM$=GM$(251)
BY 12100 NEXT A
HK 12110 ? #1;BD$:? #1;DR$:? #1;Z:? #1;PL
IG 12120 CLOSE #1:END
QC 13000 REM  LOAD SAVED GAME 
OF 13010 GRAPHICS 0:TRAP 13010:CLOSE #1
IL 13020 PRINT "K   CASSETTE OR DISK  (C/
   D)":? :INPUT R$:IF R$<>"C" AND R$<>"D"
    THEN GOTO 13020
EP 13030 IF R$="D" THEN PRINT "K  ENTER G
   AME FILE NAME. (NO EXT.) ":? :INPUT A$
XF 13040 TXT$(1,2)="D:":TXT$(3)=A$:TXT$(L
   EN(TXT$)+1)=".DAT":IF R$="C" THEN TXT$
   ="C:"
LQ 13050 ? :PRINT "K   WAIT UNTIL DATA IS
    LOADED. ":GM$=""
DO 13060 OPEN #1,4,0,TXT$:INPUT #1;B
BT 13070 FOR A=1 TO B+1:INPUT #1;G$:GM$(L
   EN(GM$)+1)=G$:NEXT A
ZG 13080 INPUT #1;BD$,DR$,Z,PL
BC 13090 CLOSE #1:IF S$="5" THEN GOSUB 10
   020:GOTO 100
ZQ 13100 GOSUB 10040:GOTO 100
QL 14000 REM  PLAY INSTRUCTIONS. 
WZ 14010 GRAPHICS 0:SETCOLOR 1,0,15:SETCO
   LOR 2,0,0:SETCOLOR 4,12,4:POKE 82,0:W=
   0
EY 14020 PRINT "K       SHOGI BOARD AND MOV
   E DIAGRAMS. ":PRINT "*****************
   ***************************";
GW 14030 PRINT "*LNSGKGSNL*A*● ●   |● ●*\"
JW 14040 PRINT "*PPPPPPPPP*C* N♥♥♥|●●●N
   B  ●●●|*--r---**              *D*  ♥K♥|   *
    / \      |* ●|●  *";
SG 14050 PRINT "*               *E*  ♥♥♥|    */
   + \ P |*  |    **              *F*------R---*
   L P  \+ L**********";
Z 14060 PRINT "*PPPPPPPPP*G*●●●   | N *|
   ●●● \  * \   /** B      R *H* S    |   *
   | ●G●  \ *  \●/ *";
MU 14070 PRINT "*LNSGKGSNL*I*● ●  |● ●*|
    ●   \*  ●b● **************************
   ************ /●\ *";
BY 14080 PRINT "*987654321*K=KING R=ROOK
   B=BISHOP*/    \*************G=GOLD S=SIL
   VER P=PAWN********";
RT 14090 PRINT "  N=KNIGHT L=LANCE  r/b=
   PROMOTED R/B ":POSITION 0,15
JJ 14100 PRINT "ROOKS, BISHOPS & LANCES m
   ay move any    distance in directions
   shown by straightlines."
PT 14110 PRINT "KINGS,GOLDS,SILVERS,KNIGH
   TS & PAWNS may move only to squares sh
   own by various   symbols"
EC 14120 PRINT "LANCES,KNIGHTS & PAWNS ma
   y not move.    backwards.":GOSUB 15000
TS 14130 PRINT "Promotion zone = opponent
   s setup area.  Pieces may promote when
    they move into  or out of their ";
QE 14140 PRINT "promotion zone.":? :PRINT
    "Pieces must always have a legal move
      therefore PAWNS and ";
JG 14150 PRINT "LANCES must promote on th
   e 9TH RANK. KNIGHTS must promote onthe
    8TH or 9TH RANKS.":GOSUB 15000
SQ 14160 PRINT "KINGS or GOLDS do not pro
   mote.  SILVERS,KNIGHTS,LANCES & PAWNS
   promote to GOLDS.";:?
ZA 14170 PRINT "PROMOTED ROOKS and BISHOP
   S gain extra   moves as shown on their
    diagrams.":?
BM 14180 PRINT "Promoted pieces revert to
    their originalrank when captured.":GO
   SUB 15000
ZL 14190 PRINT "Captured pieces maybe dro
   pped back onto the board on an empty s
   quare instead of moving a piece on ";
FU 14200 PRINT " the board.":? :PRINT "PA
   WNS may not be dropped on a file where
   you have another PAWN or on the 9TH ";
HE 14210 PRINT "RANKLANCES & KNIGHTS may
   not be dropped on  the 8TH or 9TH RANK
   S.";:GOSUB 15000
OX 14220 PRINT "The object of SHOGI is to
    checkmate the KING exactly as in CHES
   S."
UY 14230 PRINT "Moves are entered by coor
   dinates. Squarepiece on (no./letter) s
   quare moved to   (no./letter.) then";
SV 14240 PRINT " RETURN. e.g. 7G7F    To
   drop a piece on the board enter piecec
   ode letter then * ";
RN 14250 PRINT "then square dropped  on (
   no./letter.) then RETURN. e.g. G*8E
   ";:GOSUB 15000
ER 14260 PRINT "PAWNS may not be dropped
   onto the board to give CHECKMATE."
TI 14270 PRINT "For CHECKMATE enter move
   then '='        e.g 7G6G="
JI 14280 PRINT "To RESIGN enter 'R'"
EB 14290 PRINT "The game moves and positi
   on maybe saved at any time by entering
    SAVE then press RETURN KEY."
VE 14300 GOSUB 15000:?
SZ 14310 PRINT "Main display shows captur
   ed pieces on   left then board then pi
   ece recognition  display. ";
KM 14320 PRINT "(NORMAL / PROMOTED SYMBOL
   S)":? :? :GOSUB 15000:POKE 82,2:RETURN
RK 15000 POKE 752,1:OPEN #1,4,0,"K:":? "
    PRESS ANY KEY. ";
PF 15010 GET #1,A:IF A=255 THEN GOTO 1501
   0
QJ 15020 CLOSE #1
```









```
FN 20060 GM$(501)="5D5C+4B3B 3A3B 3C2D 6F
   6E 6D6E 5C6C 7B6C 5*5D 6C7B G*6C 7B8B
   G*7B 8B9B P*9C 9B9C N*8E 9C8D 7B7C N*7
   E "
NJ 20070 GM$(601)="5*9C 8A9C 7C7D 8D7D 7F
   7E 7D8E 8I7G 8E8D N*7F 8D7E 8H9G 7E7D
   6C6D="
EE 20080 RETURN
PK 20100 REM  GAME NO.2 
WP 20110 GM$="7G7F 8C8D 7I6H 7A6B 5G5F 5C
   5D 2H5H 3C3D 6G6F 6A5B 5I4H 5A4B 4H3H
   4B3B 3H2H 1C1D 1G1F 3A4B 3I3H 6B5C "
KA 20120 GM$(101)="4G4F 7C7D 6H6G 5C6D 6I
   7H 8A7C 3G3F 8D8E 8H7G 9C9D 9G9F 4B3C
   7H6H 8B8D 6H5G 7D7E 5H7H 8D7D 7G5I 3C4
   D "
MP 20130 GM$(201)="7F7E 6D7E P*7B P*7F 7B
   7A+4D5C 9I9H 7C6E 6F6E 2B9I+8I9G 6C6D
   6E6D 5C6D 7A6A P*6F 6G5H 9D9E 5I2F 7F7
   G+"
UV 20140 GM$(301)="7H7G 9I7G 6A6B 5B4B 6B
   6C R*8H N*4E 7E7F 6C6D 7D6D 5*7E 6D9D
   7E6F 7G8G 2F6B+P*7G 1F1E 8H9H+1E1D P*1
   B "
YT 20150 GM$(401)="3F3E 8G9G 3E3D 5D5E P*
   8D 4A5B 6B3E 9D8D 6F5E P*3C 4E3C+2A3C
   P*6D N*2B 3D3C+4B3C N*4E 3C3D P*3C 3B4
   B "
AO 20160 GM$(501)="4E5C+4B3C 3E3D 2B3D 5C
   5B N*3F 2H3G P*3E G*2E P*5D 2E3E 5D5E
   3G3F 4C4D N*2E 3C4C G*5C 4C3B 5B4B 3B2
   B "
DN 20170 GM$(601)="2E3C+2B3C 5C4C 3C2B 4B
YB 15040 FOR A=1 TO 8:POSITION 0,14+A:? "
                                  ";:NEXT A
JW 15050 POSITION 0,14:? :RETURN
VW 16000 PRINT "ILLEGAL MOVE. PLEASE REEN
   TER.":GOSUB 16500:GOTO 100
VI 16020 PRINT "ILLEGAL DROP. PLEASE REEN
   TER.":GOSUB 16500:GOTO 100
HL 16040 PRINT "YOU MUST PROMOTE THE PIEC
   E.":GOSUB 16500:GOTO 6030
NJ 16060 PM=1:GOTO 100
FL 16500 FOR DLAY=1 TO 100:NEXT DLAY:? :?
    :? :? :RETURN
ON 20000 REM  GAME NO.1 
WW 20010 GM$="7G7F 3C3D 2G2F 4C4D 3I4H 3A
   3B 5G5F 8B4B 5I6H 5A6B 6H7H 6B7B 4I5H
   7B8B 9G9F 9C9D 4H5G 4A5B 5F5E 7A7B "
AR 20020 GM$(101)="5G5F 6C6D 7I6H 3B4C 6G
   6F 5B6C 6F6E 6D6E 5F6E P*6D 6E5F 3D3E
   2F2E 2B3C 1G1F 1C1D 5H6G 7C7D 6H5G 4B3
   B "
FX 20030 GM$(201)="4G4F 3C5A 2H2F 3B3D 6I
   6H 2A3C 5F4G 4C5B 3G3F 2C2D 2E2D 3E3F
   2D2C+3F3G+2C3C 3D3C 4G5F P*2H 2I3G 3C3
   G+"
DQ 20040 GM$(301)="2F2A+N*6E 5G6F 2H2I+9F
   9E 9D9E P*9B 9A9B P*9C 9B9C P*9D 9C9D
   N*8F 7B7C 8F9D 8B7B 4F4E 2I1I 4E4D L*9
   A "
QX 20050 GM$(401)="P*3B 9A9D 3B3A+P*4F 3A
   4A 5A3C 2A3B P*3A 4A3A 4F4G+4D4C+6C6B
   P*6C 5B6C 4C5C 6A5B 5C5B 6B5B L*5D 5B4
   B "
   3B="
EH 20180 RETURN
QH 20200 REM  GAME NO.3 
JP 20210 GM$="7G7F 8C8D 7I6H 3C3D 6H7G 7A
   6B 2G2F 3A4B 3I4H 4A3B 6I7H 5C5D 5G5F
   5A4A 5I6I 6A5B 3G3F 4C4D 1G1F 1C1D "
RG 20220 GM$(101)="4I5H 4B3C 8H7I 2B3A 6G
   6F 7C7D 2F2E 9C9D 7I4F 8A7C 9G9F 9A9C
   4F3G 3A4B 6I7I 4A3A 7I8H 3A2B 5H6G 8D8
   E "
ZJ 20230 GM$(201)="4H5G 8B9B 5G6H 5B4C 4G
   4F 9D9E 9F9E 9C9E P*9H 4B6D 6H5G 6D5C
   3G2F 6C6D 5G6H 6B6C 2I3G 6D6E 6F6E 7D7
   E "
AI 20240 GM$(301)="4F4E 7E7F 6G7F P*7E 7F
   6F 6C7D 2E2D 2C2D P*2E 2D2E 3G2E P*2D
   2F3G 7D6E 3G7C+6E6F 7G6F 2D2E 6H6G G*7
   F "
NE 20250 GM$(401)="7C7D 9B9D 7D8E 9D9A 6G
   7F 7E7F G*6C N*9F 8H7I P*8H 8E7F 8H8I+
   7I6H 9F8H+7H6G 9E9H+6C5C 4C5C P*2D 9H9
   I "
CN 20260 GM$(501)="6H5G P*6D N*3G L*2F 2H
   5H 2F2G+5F5E N*6E 6F6E 6D6E 7F6E 5*6D
   5E5D 6D6E 5D5C+5*5E 5G4H P*5G 6G5G P*5
   F "
GC 20270 GM$(601)="5G4G B*3H N*4I 3H4G+4H
   4G 5F5G+5H5G G*5F 4G5H 5F5G 4I5G R*2H
   5*4H G*6H 5H6H 2H4H+P*5H 8H7H 6H7H 9A9
   H+"
DN 20280 GM$(701)="7H7G 5*7F 7G8F 9H8G 8F
   7E 8G8E="
EO 20290 RETURN
```

The XEP80

Atari's 80 column board and printer interface

by John S. Davison

For me, an avid 8-bit user, there was one outstanding item at last year's PCW show. It's presence took me completely by surprise and generated more excitement than any of the myriad other products on display. I found it on the Atari stand, seemingly unnoticed by the passing multitudes.

'It' goes by the catchy name of XEP80. It's purpose? Wait for it....to provide a high quality 80 column display for the 8-bit machines. Yes folks, Atari have actually gone and produced the 80 column board we've all been longing for for all these years. And it's a cracker!!!

It plugs into the joystick port and is driven by a handler booted from disk. You can use it straight away with BASIC and other programming languages, but unfortunately not with Atariwriter. An Atari representative said he thought this anomaly would be handled in one of two ways. Either a new version of Atariwriter Plus, or a special add-on 80 column driver would be produced for it – he wasn't sure which. He said he expected other producers of serious 8-bit software to support it fairly soon.

Don't forget you need a decent monitor to make use of this device. Atari were using a Philips monochrome monitor for the demonstration, and the quality in 80 column was nothing less than superb – the text was rock steady, razor sharp and perfectly readable. As well as displaying normal 80 column mode text, the XEP80 has one or two additional tricks to offer, too. Text fields can be displayed in normal or inverse video, and as a steady display or flashing. You can also choose to have the cursor flash – no more losing it on a screenful of text! There's also a double height character set you can use for headings, menus, etc, and the full Atari character graphics set is available. The device has it's own 8K memory and this is accessible to the programmer, allowing use of custom character sets.

As if this weren't enough, Atari have included a standard parallel printer interface on the back of the box, so you can plug in any Centronics type printer. It sounds as if this device could be the basis of the rumoured 'Amstrad bashing' word processing package.

At this point I was reaching for my cheque book, but unfortunately the XEP80 was not available at the time. The model on display was one of only two in the country. The good news is that it is scheduled for the end of 1986 and should be available in the shops by the time you read this. The cost? Somewhere around £70!

I guess this has just solved the problem of what to buy with all that money you were given for Christmas! I just can't wait to get my hands on one!



The PAGE 6 ST section

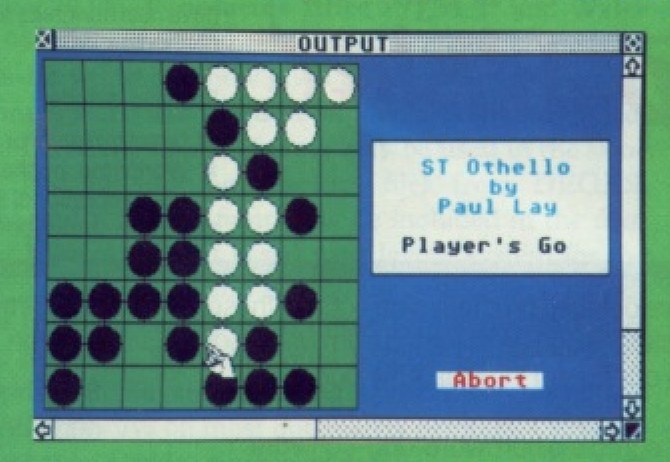
FORE!

GOLF ON YOUR ST

The Karate Kid Part II

Microdeal's Karate Kid II

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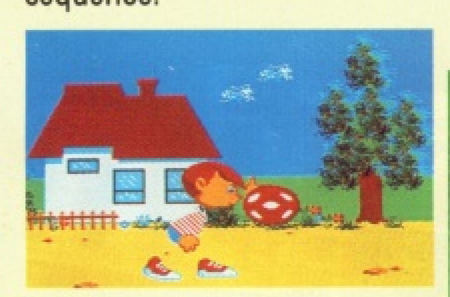
* Turn any part of your design into any shape or size of brush
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The unique double-screen facility allows you to create pictures in each of two screen-size panels, or mix text using the fonts supplied, then preview on screen the full A4 artwork in colour or shades of grey.

Art Director is completely compatible with Film Director and Fleet Street Publisher, and is supplied complete with demo files and comprehensive manual.

£49.95 inc VAT

For home movie-making and professional animation studio work, Film Director allows you to create, assemble and control on screen every element of an animated sequence.





Here's just a brief look at what you can do:

* Cut, displace, reflect, invert, copy, and enlarge picture elements in individual frames
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* Project the film forward or backward, at normal speed, in slow motion, or step-by-step
* Add captioning, music and sound effects
* Download the finished film on to a video cassette recorder for presentations

The picture elements can be constructed from Art Director, Neochrome, or Degas files – a conversion program is supplied. Each film sequence can be up to 2000 frames long, and can be projected at whatever speed you wish.

Film Director is supplied complete with demo files and a comprehensive user manual.

£59.95 inc VAT





Desktop publishing really comes into its own on the Atari ST, and the Fleet Street series uses the machine to its fullest capabilities.

Giving the user total control over text, graphics, and the complete page, Fleet Street Editor enables novice and professional alike to produce finished pages that would have cost hundreds of pounds each using traditional methods.

Features include:

* Direct text entry or import from other word processors
* Wordwrap, hyphenation and justification, kerning, and proportional spacing
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* Multiple fonts, point sizes and styles
* Graphics library supplied – you can also import your own graphics from other software or through a digitizer
* Full text editing and text and graphics manipulation facilities in page make-up
* Any page size from A5 to tabloid or user-definable, with any number of columns and variable margins and automatically computed gutters

Fleet Street Publisher runs under GEM and will output as standard to a dot matrix printer. Laser printer drivers will be available in the New Year, together with additional fonts and graphics libraries.

Fleet Street Publisher is supplied complete with comprehensive manual.

£ 115 inc VAT

More detailed brochures on each of these packages can be obtained from Mirrorsoft at the address at the foot of the page.

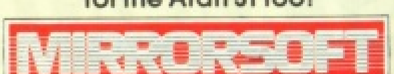
For complete hardware-and-software packages, contact:

Andromeda Software, 200 Brent Street, London NW4. Tel: 01-203 6366

SDL, 1–4 The Mews, Hatherley Rd, Sidcup, Kent DA14 4DX. Tel: 01-309 1111

Haba Systems Ltd, Lonbridge Delta, Pier Road, North Feltham Trading Estate, Middlesex TW14 0TT. Tel: 01-751 6451

PS Don't forget Mirrorsoft publish games for the Atari ST too!



Maxwell House, 74 Worship Street, London EC2A 2EN
Tel: 01-377 4645. Telex: 886048 BPCC G
Fax: 01-377 0022

101 ST HINTS AND TIPS
(well a few!)

I was recently speaking to one of our contributors along the lines of 'Did you know you can .... ?' when it became apparent that we each knew a few tips on using the ST that the other did not know yet both thought everyone knew! So, in an effort to document the (possibly) unknown we will start this column. It may only run for this issue but at least you will know where to find it. If any readers have discovered other hints or tips for the easier use of the ST or know of any we have missed please let us know and we will include them in the next issue.

SELECTIVE COPYING: Hold the Shift key while clicking on files to copy. This way files can be chosen at random instead of in blocks.

STOP PRINTING: If you have started a screen dump and for some reason wish to abort, just press ALTERNATE-HELP again.

CHANGING ICON NAMES: If you want to label your drives in a more meaningful way, for example 'main drive' and 'backups' or 'top drive' and 'bottom drive', click on the icon and then drop down Install Drive from GEM. Delete the current name and type in a new one. Once done save the desktop to the disk that you wish to use for booting up. You cannot change the Trash Can name in this way but the DESKTOP.INF file can be loaded into an ASCII word processor and changed provided that you don't use a name longer than the existing one. Just resave the Desktop again when it has been changed.

CLEARING INFORMATION: In most cases the ESC key will clear an existing filename so that it is not necessary to backspace. This applies to filenames in Selection Windows and also to the Control Panel when you want to change the time or date.

DISK DIRECTORIES: To find the contents of a disk quickly, open a window on a particular drive and then insert a new disk in that drive. Instead of double clicking and opening another window just press the ESC key.

USING INACTIVE WINDOWS: Normally if you want to copy a file from an inactive window you click on that window, drag the file across and then have to click on the original window to re-activate it. By holding *the right hand mouse button* at the same time as clicking the left button, you can select files for copying from inactive windows thus saving some considerable time.

I hope that a few of the above are new to you and will help you use your ST to greater effect. As I said above if YOU have any hints or tips, please let me know.

Les Ellingham

Microdeal should by now have **Karate Kid II** out and if the game is anything like the initial graphics then it should be a stunner. Those graphics stopped every passer by at the PCW show and some of the action is said to involve the full screen graphics. The game closely follows the film and, in addition to fighting, involves such tests as breaking blocks of ice and catching flies with chopsticks! There are no points, no high scores, just survival and the chance to become a hero.

Another new one from Microdeal for C programmers is **Easy Record** a file management system for programmers to keep and access data records in an orderly fashion. A sort of dedicated database, it sells for £39.95

Interface Technology in the States has announced the development of an adapter to allow the 520ST or 1040ST to be used with a standard IBM style (TTL/RGB) colour monitor. The unit plugs into the video output and simulates a Colour Graphics Adapter with 8 colours in medium resolution and 4 colours in low resolution. Also planned is a composite Video Adapter which will allow the use of a standard mono monitor in the low and medium resolution modes. Price of the first adapter is $49.95 and details can be obtained from Interface Technology Inc., 14440 Cherry Lane Court, Suite 219, Laurel, MD 20707, U.S.A.

Robtek have a special Christmas offer, **Macro Manager and ST Toolkit** both on one disk for just £44.95 a saving of over £15. Hurry, Christmas is nearly over!

Epyx and U.S. Gold have just released **World Games** at £24.99, a follow on from the highly popular Summer and Winter games but this time featuring sports that don't make it into the Olympics. The game includes a world travelogue and features such sports as caber tossing, cliff diving, bull riding and log rolling. The graphics are excellent.

Kuma keep them coming with a new GEM based word processor called **K-WORD** and an improved version of their comms package entitled **K-COMM 2**. Also recently released is an upgrade to K-GRAPH. K-WORD and K-COMM both retail at £49.95 and are up to Kuma's usual standards.

Metacomco have released two new languages for the ST thus extending the scope of the ST even further. **Cambridge Lisp** is said to be the most powerful language yet to become available for the ST and **BCPL** is a powerful programming language suited to a wide variety of applications from process control and operating systems to applications and games. Cambridge Lisp is £149.95 and BCPL is £99.95.

First releases from XLENT SOFTWARE (UK) are **Megafont ST** at £29.95, **Typesetter Elite** at £34.95 and **Write 90** at £19.95. Megafont has been well known and respected in the Atari 8-bit world and now gives ST owners the opportunity to print ASCII, 1st Word or similar files in a variety of text styles. Different sizes and fonts may be used in the same document and in addition graphics files from DEGAS, Neochrome and Rubber Stamp may be included in the text. Typesetter Elite is a GEM based page layout system for use with a dot-matrix printer and is ideal for newsletters, broadsheets and the like. Graphics, multiple font styles and sizes may all be included. Write 90 could become the most indispensable program for anyone using spreadsheets as it will print any file sideways on most dot-matrix printers. Certainly a lot cheaper than a wide carriage printer! ●

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Metacomco MAKE

reviewed by Matthew Jones

As I have often said in my language reviews, a typical programming session is a cycle of editing, compiling, linking and running / debugging. Last issue I reviewed Menu+ from Metacomco, which is designed to make this cycle easier. By selecting 'edit' in a menu, your editor is loaded and run, automatically loading the file you are interested in. Consecutively selecting 'compile', 'link' and then 'run' allows you to smoothly start each process, but there can be problems with such systems. For instance, if you want to edit multiple files, having to select each in turn can slow you down, and the link option becomes complicated.

Menu driven systems (not just Menu+) are at their best when you are only dealing with one program. For the larger programs Metacomco's MAKE program comes into its own. Operation is very simple, and, when working properly, it should save you much typing, and a fair bit of time. MAKE works by using the date/time-stamp that is put on each file when it is written to (this means that you must always set the time at power-up). When you edit a file, for example 'cmain.c', the date/time-stamp is set to the current time. When MAKE is run, it loads a file known as a MAKEFILE which contains directives which tell MAKE the dependencies of each file.

In the example given, the makefile contains directives telling MAKE that 'cmain.app' depends on 'cmain.bin' and 'csubs.bin', which in turn depend on 'cmain.c' and 'csubs.c' respectively, each of which depend on a single header file 'chead.h'. With this information, MAKE would look at the date/time-stamps of each file, and if 'cmain.app' is older than any of its dependants, it will carry out instructions also held in the makefile on how to update the files. As 'cmain.app' depends on 'cmain.bin' which depends on 'cmain.c' which, due to the edit above, is more recent than 'cmain.app', the instructions required to make 'cmain.bin' from 'cmain.c' will be carried out (in this case the running of a compiler), then those to link 'cmain.bin' and 'csubs.bin' (the linker), until at last 'cmain.app' is up to date. If I had edited the header file, both files would have been compiled, then linked. This may seem a complicated technique, but once you have your makefile set up correctly, the whole process is initiated just by double clicking on MAKE.

```
# a sample makefile
# the files involved
CSOURCES = cmain.c csubs.c
OBJECTS = cmain.bin csubs.bin
# the rules
.c.bin :;
      d:\lattice\lc1.prg -ccmw -ic:\c\i
ncludes\ -oc: $*
      d:\lattice\lc2.prg  -oc: c:$*
# the dependencies
 cmain.app : $(OBJECTS) ;
       d:\gstlink\link.prg -with cmain
-prog cmain.app -nolist
$(CSOURCES) : chead.h
# a few extra directives
.END : d:\utils\bell.prg
# end
```

Example MAKEFILE

When you are dealing with large numbers of files, this is by far the easiest way to manage them. Firstly you do not have to remember which ones you have edited as MAKE will find out. Secondly, once you have started MAKE you may do something more useful than wait for the compiler to finish to be ready to start the next compilation. If you tell MAKE to sound a bell at the end of the compile / link, it will draw your attention when done. There are dis-advantages to this however as if, for example, you have edited a file but don't really want it compiled, you can get MAKE to sound a bell by running a 'bell ringing' program at the end, however if there is a compile error this does not happen and the procedure will end silently.

The makefile example is an actual file which I have been using myself. It demonstrates several points, first that you can use macros to represent groups of files (the list can spread over more than one line). I found that MAKE will hang (i.e. go to sleep) when I put a macro on either side of a dependency. Also, the dependency using the header file 'chead.h' does not work (I said it did above to illustrate the principle). I have another makefile which has two such header dependencies, one of which works, but the other doesn't, and I can find no explanation. Also worth mentioning is that you can use an 'implicit rule' to compile the .c files, which saves having to define the compile sequence more than once.

The MAKE manual is very technical, and is not particularly easy to read or understand. I must say that I am not sure that all the problems I have had are bugs in MAKE, it may be that I don't fully understand the manual, but the end result is the same.

Two extra programs are included on the disk, the first is a 'TOUCH' utility which is used to set the date/time-stamp of a file to the current date & time. I found this invaluable when I forgot to set the date at power up, and also for forcing recompiles. It seemed to have trouble stamping all the files in a large (50+ files) subdirectory though. 'SETDATE' is a program for your boot disk 'AUTO' folder, and allows you to set the date and time. I found it very frustrating, especially as it is very strict on format (it won't even let you press RETURN to skip it!), and as the date is not only lost on reset, it is effectively worthless. If you want such a program, use EURODATE, a public domain program which is far less strict on format, or something similar.

To conclude, MAKE is very suitable for any programming situation where you are frequently editing more than one file. I have found that once it has been fine tuned it is very reliable, and although there is a slight overhead while it checks the dates of all the files, it saves time which would have been lost typing in the next file to be compiled. The manual is perhaps a little confusing, but at the end of the day it is a worthwhile utility.

MAKE costs £49.95 and is available from: Metacomco plc, 26 Portland Square, Bristol, BS2 8RZ Telephone (0272) 428781

GAMES ... UTILITIES ... SERIOUS OR FUN , IT'S ALL ON THE ST

a whole variety of software reviewed

WINTER GAMES
Epyx Computer Software
£24.95

Reviewed by John Davison jnr

Winter Games is a simulation of a Winter Olympic Games (it is the sequel to the highly popular 'Summer Games' which can be found on ATARI 8-bit micros). There are seven events to play; Hot Dog, Biathlon, Speed Skating, Figure Skating, Ski Jump, Free Style Skating and finally Bobsled. Every single event in the Games has its own theme music which plays while the event is loading. These are all extremely good and match, in a way, the type of event.

When the game first loads, a colourful animated title screen leads into the opening ceremonies, complete with the lighting of the flame and the fly past by some highly detailed doves. You are then put on the main menu screen where you select to either compete in all the events, compete in some events, compete in one event, practice an event, see the world records, watch the opening ceremonies (again) or leave Winter Games. If competing in an event you can select your country out of a choice of 16. This section is almost the same as Summer Games on the 8-bit micros.

To give you an idea of what to expect let me take you through the events.

Hot Dog Aerials is a demonstration sport, you have to perform daredevil ski-jumps in front of a panel of judges. Moves you can perform include; Back and Forward Flips, Mule Kicks, Daffys, Back Scratches, and Swans. The graphics in this event are fantastic. The backdrop is just like an oil painting, with highly detailed pictures of mountains and trees. The animation is very, very slick.

Biathlon is a combination of cross country ski-ing and target shooting. It may seem like a strange combination, but it is great fun. Again the backdrops are superb, in this event there are four animated backgrounds all of which are amazing! The animation is very good, my only complaint is that this event is a joystick 'waggler', in other words, you have to move the joystick left and right very quickly to achieve any decent results! You can use the keyboard (as in all the events) but I don't advise that for this event.

Speed Skating is another 'waggler', but not quite as violent. You have to move your joystick to move the skaters legs like a real human. The animation in this event is smooth and so is the scrolling (considering the ST has no hardware scroll) but the background graphics have no 'pazazz', to tell the truth they are downright boring. The occasional blue reflection in the ice and the number of metres travelled scroll by to give the illusion of movement. The music at the beginning is very catchy and although the sound effects are relatively good there are not enough of them.

Figure Skating consists of a one minute, timed exercise of seven compulsory movements: Camel Spin, Sit Spin, Double Axel Jump, Double Lutz Jump, Triple Axel Jump and Triple Lutz Jump. The graphics are back to the standard set by the first two events, superb, slick scrolling and smooth animation. Some of the movements look so natural and the music is well executed.

Ski-Jump. Fantastic graphics on this event and a really dramatic tune to get you going. The animation is also very good and the background graphics are (yet again) superb. Not a lot to really say about this one as it is straightforward and great to play.

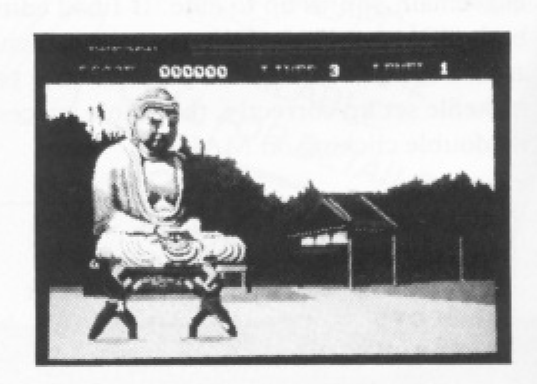
Free Skating. This event uses the same graphics and movements as the Figure Skating. The differences are that you have two minutes to invent your own routine, and you don't have to do each move just once (you mustn't do more than three of each though). The music is very different – it's all drums and modern 'pop' type music – overall a superb event.

Bobsled. This is a very pretty event with smooth animation, good background graphics and nice sound. There just seems to be something missing from the playability point of view. I couldn't find as much enthusiasm for this event as for the others.

The program comes on two single sided disks and has a detailed, easy to read 12 page manual. Overall I cannot deny that this is a superb game and anyone who is looking for a good sports simulation for the ST should check this out, it's great! £24.95 is not a bad price, but still a bit expensive for a game. Let's hope the price of ST software starts to come down soon!!

ST KARATE
Paradox/Eidersoft Software
£24.95

Reviewed by Les Ellingham



Paradox were one of the first companies to release any game on the ST with Mission Mouse which ran in mono only. I never saw a finished copy but what I did see only really came into the 'alright' category. Nothing else seemed to happen for a year and then, suddenly, at the PCW show in 1986 Paradox leapt out with no less than six ST games all in glorious colour and

continued overleaf ▶

with midi-compatible sound to boot! Hopefully we will bring you reviews of these in the coming months but let's start with one that they are quite proud of themselves.

Karate games on micros are beginning to get a bit boring, it now depends entirely on how well they are programmed. With ST Karate there is no need to worry, it is excellent. Well programmed with good graphics and sound and fairly easy to begin but rapidly becoming hard! You have a choice of one player against the computer or two players competing. Music and sound effects can be switched off and there is a high score table. The game is played with the joystick and control is quite complex to master fully. There are no less than 18 possible moves depending on whether the fire button is pressed and the same number with your fighter facing in the opposite direction!

At the first level fighting against the computer is not too difficult and, once you have (semi-)mastered the controls you should easily get to the next round. In fact the same scenario is fought a second time before the background changes and added perils are introduced. Flying 'stars' or whatever those horrible martial arts things are called must be avoided and bouncing pots can be broken for extra energy. Get through this round and you are presented with a whole row of bouncing pots to destroy and if you can get past this level you are doing well. Here comes my only criticism of the game for nowhere in the instructions, which are not good anyway, does it indicate what you need to do. By the time you have thought about it you are dead! I am not going to tell you how to get past this round (*I* had to figure it out!) but if you do you will then fight against two opponents. You will then have to fight them again. What happens next I don't know, by this time my joystick hand felt like I had been breaking the proverbial breeze blocks all day!

I must admit that I thought this would be a bore, but it had me hooked because of its qualities. Excellent graphics, good music, digitised sound (not *that* good) and eminently playable with just the right degree of difficulty. Highly recommended if you enjoy this type of game. Watch out for the stunning triangular packaging which looks great on display but is not easy to put back together once opened and look out for more from Paradox, it might be as good as this.

K-SWITCH
Kuma
£29.95

Reviewed by Matthew Jones

Do you work in the sort of situation where you may be working on your word-processor when the phone rings and someone wants you to give them some information from your database? Of course you have to save the document, quit the word-processor, and then load the database, load the file, and access the record. The caller takes the information, and then you have to reverse the whole process to get back to where you were, and then the phone rings again...

One answer to this type of problem is Kuma's K-Switch, a desk accessory which allows you to have two programs in memory at the same time. K-Switch is installed by selecting the K-Switch accessory at the desktop, selecting your options, and from then on your computer is split in two. The action of K-Switch is to tell the ST that it has only half of its memory (the lower half), and to use the other (upper) half to store a copy of the lower half. K-Switch is then 'transparent', and you then carry on using your ST as normal (though with half the available RAM). Now, when the phone rings, instead of saving the document etc., all you do is hold the ALT key, and press both SHIFT keys. Within a second you are seemingly back at the desktop, and may proceed to load your database. But now, when you have finished accessing the database, you press ALT and the two SHIFTs again, and you are exactly where you were when you left the word processor. When the phone rings again this time, you can switch straight back into the database.

K-Switch can be used with many applications that require fast switching between two programs. K-Switch has a RAM disk option to provide a fast way of porting data between two programs (Kuma give the example of their K-Spread spreadsheet and K-Graph charts program, where you can do calculations in the spreadsheet, save them to the RAM disk and load them into the switched K-Graph). It may cause problems with other programs that use the ALT or SHIFT keys significantly, for example a graphics demo that uses ALT to exit, but otherwise K-Switch will remember all the significant memory variables, including the screen resolution, between switches. Kuma warns that you should not be accessing the disk drive or using the serial port when you switch because they are interrupt driven and may have side effects.

When installing K-Switch, you can choose to have both the switcher and the RAM disk, or only one of them. Once installed, K-Switch will allow you to save or load the contents of the switched memory or the RAM disk, which means that you can save a 'worksession' and return to the exact point at a later date. By saving the RAM disk, you could restore its contents in one fell swoop, rather than copying files one at a time.

K-Switch is a very easy to use utility, and is invaluable if you are constantly loading and re-loading two programs. The main problem is with the size of memory available to each program, and you should check that each will run in half of that of your machine (less the RAM disk and accessories). On a 1040ST or larger this should be little problem as all software is being written to run in a minimum 512K.

THE ALTERNATIVE.
Microdeal
Colour or Mono.
£29.95

Reviewed by Mark Hutchinson

The Alternative is loaded as an Accessory file on the GEM desktop and can be called via the drop down menu. It is a system that will allow you to store often used phrases and statements and instantly recall them by using one of the designated ALTERNATIVE keys.

So what does that mean? Well, suppose you use BASIC or in fact any GEM based program (LOGO, 1st Word, GST 'C' or whatever) you will probably use certain phrases and statements quite often. In a program why bother to type, for example FOR PAUSE=1 TO 100:NEXT PAUSE if you can just press ALTERNATE-P? If you have defined this key, the Alternative will print the statement on the screen immediately.

The Accessory will let you set up a file of key definitions using its own editor, for which you must have an 80

column display, and then save the file under your own name but with the extender .ALT. You may have a different file for each of your programs. The file will store 36 alternate key combinations but you may concatenate using the caret which means that a key can combine the statements of other keys. Be careful not to get into an endless loop using this though! The keys used by the Alternative are the characters A-z and 0 to 9 and each will store a string of up to 60 characters. If you wish, the Alternative can be bypassed by pressing ALTERNATE and -.

My copy of the program worked well. I spend a lot of time using a word processor but as I use very few standard statements with a word processor I did not find a lot of use for it in this context. It comes into its own, however, when used with a language (like BASIC?) or with the text editors found with Modula 2 or 'C'. The only problem was remembering what each key was for. The ability to print a quick reference would be very handy.

The Alternative is easy to use, resides as an accessory so is always there and has separate data files. If you take the trouble to set it up and use it fully then it is a good buy. There is a similar program about to be released which may give it some competition but it is a good program and I would recommend it.

DB-Calc
Robtek
£49.95

Reviewed by Alan Goldsbro

DB-Calc is a Database with a difference, that is if you believe the sales blurb of the manufacturer. Gem based, it uses the friendly facade of Drop down menus, windows and those irritating error messages that keep appearing every time you press the wrong key or swing the mouse by its tail!

DB-Calc's claim to fame is the possibility of calculating mathematical formulae to take the difficulty out of producing stock lists, financial costings and statistics. Calculating Databases are nothing new, household names as DBase II on 16 Bit and Synfile+ on the 8 Bit cater for calculations. There are other programs such as VIP Professional which primarily is used as a spreadsheet but is more than adequate as a calculating database.

The first advantage of DB-Calc is a choice of two files, DB-Calc for 520 (half meg) and DB-Plus for 1040 (1 meg) owners. The first file can hold up to 10,000 lines of data and the latter 40,000. Working on four lines per record it is possible to have a file of 2,500 records or 10,000 records respectively.

Setting up your database requires a template to be constructed, e.g. name, address, town etc, or even Item, Number, Stock, Quality required, Quantity left etc. All the fields are created in the Data Window and are easily edited or deleted. As soon as you have created your fields you are at liberty to start entering your data. Sorting the database is so fast that if you blink you'll miss it! DB-Calc will sort both alphabetically and numerically from A to Z, Z to A, 1 to xxxx – xxxx to 1.

Search has a greater range than Sort. Selection can be equal to, not to equal to, less than or more than and wildcards of '*' and '?' are allowed throughout. Data is selected one section at a time. If for example you wanted to select from a customer accounts database you must firstly decide on which field the selection will be made, for example Town and then select which town you require. Selections that pass the chosen criteria will be placed in a temporary file and from that selection you may to narrow the choice down by selecting one particular area of the town. If you wish you may select individuals who have more than £100 to their credit and so on. This data selection can be saved under a separate file name for future retrieval. All the selection criteria is shown in a separate window adjacent to the data window.

Calculations are performed through another window called a 'Model'. Information from the selection window will be used only. From here the program takes on a different approach and the formulae for the calculations must be typed in manually as opposed to selecting from a menu. The resultant information from the model can be dumped to screen, disk or printer. If you require a hardcopy then the model allows you to enter printer commands in decimal to have total control over the output.

Files may be saved, loaded or appended together provided they have the same number of fields and the same field names.

A number of good points can be made about DBCALC, GEM Environment, Windows which can be active or not, sizeable windows, calculating capabilities, tremendously fast sorts and searches, functions, keys, reporting facilities, total printer control and price (£49.95) however there are unfavourable points.

DB-Calc was written in Holland and whilst the program is excellent in its operation, there are extremely difficult sections to grasp fully, especially for review purposes. There are a few sample files with which to work with but they are limited in depth and value. The manual of twenty four pages unfortunately looks as though the translator learned English as a third language. Some of the instructions on screen are different to those in the manual, for example, the manual says 'Add field' whereas the screen menu says 'Insert field'. This only adds to the confusion as much of the manual is not easy to follow and none of it is in logical order. It constantly jumps from section to section and very little help is given. Screen pictures shown in the manual consist mainly of error messages and much of this space could be used in providing clearer instructions.

DB-Calc would be immediately recommendable for its capabilities and its price tag if it wasn't for the totally inadequate manual and lack of tutorials. I think the program has good potential and, given its price tag, could be a market leader. I hope the British distributor will take note of these comments and produce a really comprehensive manual to go with what is obviously a quality database.

The disk comes packaged in a video type plastic box and is well protected against copying. This will obviously cause some problems if you have a hard disk or are concerned about backups. At £49.95 a good buy but only if you can decipher the manual and are prepared to spend some time to get the best out of it.

HELPMATE
Royal Software
£24.95

Reviewed by Alan Goldsbro

Helpmate is one of the breed of desktop accessories now available for the ST range, comprising of three different programs which can be used separately within any Gem program.

continued overleaf

REVIEWS ... REVIEWS ... REVIEWS

Calculator, Calendar and Phone pad make up Helpmate and are accessed through the desktop after booting up. The three files can be split up and copied onto your appropriate boot disks.
Calculator: This is similar to a standard four function pocket sized calculator available almost anywhere. All the standard keys are there plus 'Memory' and a 'Copy Key'. Screen keys are activated by using the key pad on the ST or by pointing and clicking the mouse and are displayed immediately on pressing. The only exception to using this method is the 'Copy Key' which can only be accessed using the mouse.

The screen keys actually flash when you press the corresponding keys on the ST. The function of the Copy Key is to copy the value of the calculators display on to a file on disk. This file has a pre-set name [Scrap.TXT] which can be called up by a Gem based Word Processor such as 1st word. The file will constantly overwrite itself so multiple dumps to file will result in the last file copied being the only one available for patching into your document.
Calendar: To get the best use of this section the computer needs to know the correct date and time. Using the control panel resident on the Gem Desktop, you must type in the correct date and time although those of you who use a clock card can by-pass this operation. The 9000 year calendar, like the calculator, is selected from the Desk Drop down menu and is displayed on the screen. Provided the date was correctly set prior to this selection the display will show you the correct month and from this you can either display the previous month or the following month and continue to scroll through the months at will.

Select a date by clicking the mouse on your choice and the 'alarm' feature is activated. Based on the 24 hour clock you type in the time of your appointment or reminder and a brief message of up to sixteen characters. Click on the OK panel and it is stored in memory. A maximum of six appointments are allowed per day. At the given appointment time, a 'peep' is heard from the speaker and a box is displayed on the screen with your appointment message. If you require it, a list of appointments can be dumped to printer although every time I tried this the time was always 12:34 even though the screen display showed the correct time and the alarm 'peeped' at the stated screen time.
Phone Pad: Not much use in this country as we have a different telephone system from Old Ma Bell in America. The main functions of this file is to list up to 100 names and telephone numbers and, provided you have a Hayes compatible modem and the American system of pulse/tone dialing then, it will automatically call-up your selected number. At a pinch you could use the phone pad as a mini data base to record phone numbers etc, but unless all your contacts have three figure area code, you won't get much use out of it.

All the accessories can be moved around the screen or overlayed on any other GEM application. The manual is eight pages long, well written and informative. Overall I found the program fairly useful, well two parts anyway, although priced at £24.95 I feel its a little costly for what you get. If it had a note pad instead of the phone pad then it may appeal to a wider audience. ●

LEADER BOARD

FORE!

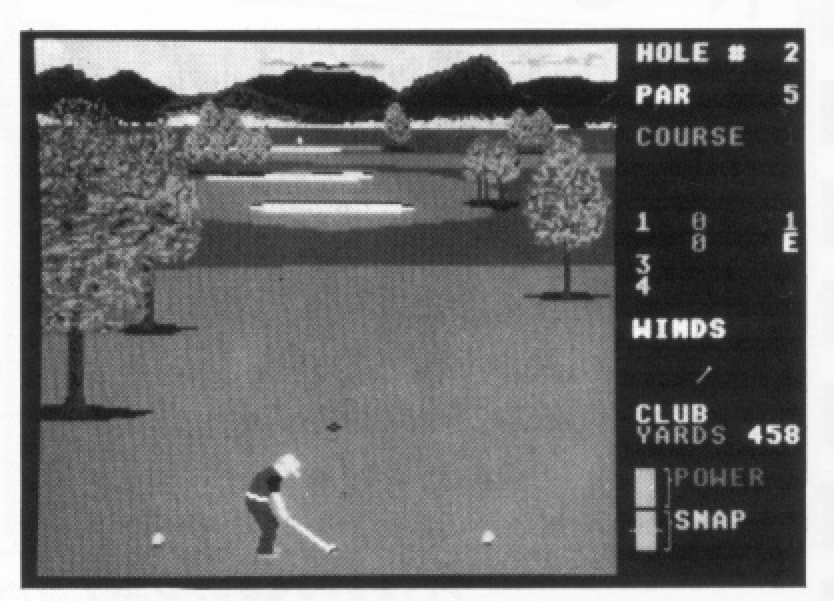
Sports simulations are the hot topic in computer games at the moment and golf is the latest to be computerised on the ST. Leader Board has already had praise heaped upon it but is not the only golf simulation available on the ST. In the second part of this review we will take a look at its main challenger, Mean 18.

I suppose I ought to confess from the outset that I have become hooked on computer golf, it seems the ideal game for individual play or for challenging a few friends. It has the right degree of challenge requiring a little dexterity and lots of thought, unlike many of the arcade style games which I find too difficult to play. Leader Board has several options to enable you to start at the appropriate level. Novice level sends each ball down the fairway true and square and is ideal for your first few rounds. Later you may progress to Amateur where you have to control the hook and slice of the ball while Pro level adds the effects of wind to the game.

The screen presentation is superbly realistic with your view from behind and slightly above your player who is represented as a detailed human figure. You can see as far down the fairway as you would expect in real life which of course means that you often cannot see the green. On the right hand side of the screen is information about the hole you are playing together with current scores and wind details. Your first task is to select a club which is done by moving the mouse forward or back. I found this to be a little awkward and prefer the Mean 18 style of 'clicking' to select a club. The direction of your shot is determined by a small cursor which is controlled by the joystick and 'floats' above your golfer. The joystick button is used to control the power of the shot by watching a small power bar on the right hand side of the screen. It really is quite small and it is fairly difficult to judge the precise power of your shot, that will take some practice. If you are playing at Amateur or Pro level you must also use the mouse to control the hook or slice as the swing comes down. You can do this either by watching the golfer or the power bar. Once committed there is no second chance so crack the ball and watch it sail down the fairway.

Now you get to see just how realistic this simulation is. It is beautiful! The ball will sail into the distance and bounce a few times before coming to rest, hopefully on the fairway or green. If you land in a bunker, the sand will kick up and, on a short hole, it is perfectly possible to hit the flag and watch the ball bounce away! I have not yet managed a hole in one although I understand it is possible. The various holes have trees, bunkers and rough and are often surrounded by water. This is possibly one of the disappointing parts of the game as the holes are all fictitious (unlike Mean 18) and are the product of the author's golfing fantasies. You need a caddy *boat* on some of these courses or need to practice that ancient art of walking in water!

Once your shot is made the screen redraws very quickly to show the new position of the ball and you are told the distance from the hole. Select another club and, hopefully, this time you will be on the green. Now the choice of a Putter only is automatic and you don't have to worry about hooking and slicing. A 'pole' on the green casts a shadow to indicate the lie of the green and you only need set the direction and power of the shot. With luck you will hear that little rattle as the ball sinks into the hole and it's off to the next tee.



Superb realism

There are four courses on the main disk, of increasing difficulty, and also a driving range for practice. A few shots here will soon get you into the swing of things (sorry!). There is also a demo mode which may be designed to encourage you as the golfer is not that good!

THE TOURNAMENT DISK

Once you have mastered the courses on the main disk you can get the Leader Board Tournament Disk #1 which adds four new courses for your enjoyment. These are even more outrageous than the originals and in real life the course designer would be hard pressed to find a club crazy enough (or rich enough) to build such courses. Strangely though, the courses are not that much harder and will add the right degree of extra challenge without becoming impossible. I was able to get round the first course in just 4 over par despite having played the original courses only a couple of times.

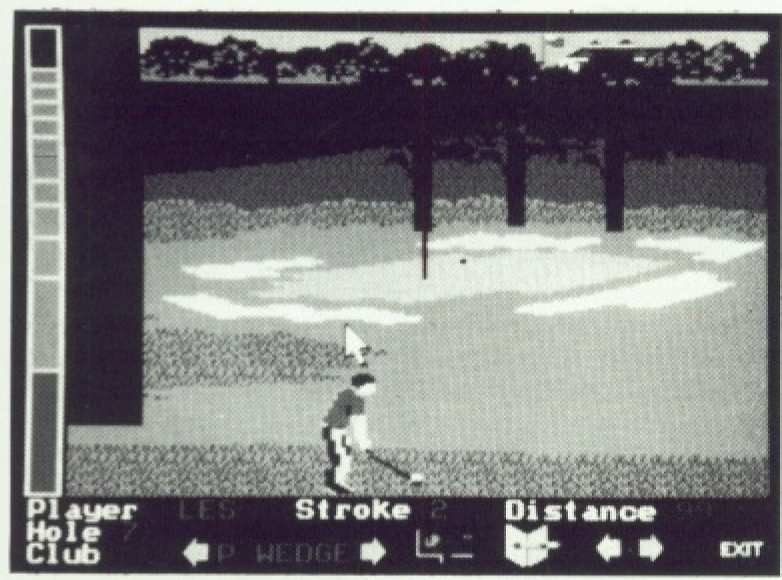
Overall it has to be said that this is one of the finest sports simulations of all time. The graphics are superbly detailed, there is a sense of realism as you play each hole and just the right balance of difficulty. Leader Board is a game equally well suited for play on your own or with friends where you will find the competitive edge comes to the fore. The adrenalin will really start flowing when the scores are close with only two holes to play! Be warned though, Leader Board is a game that you will play for hours on end. There will surely be a few new lonely ladies the, computer *and* golfing widows!

ENJOY A GREAT ROUND OF GOLF ON YOUR ST

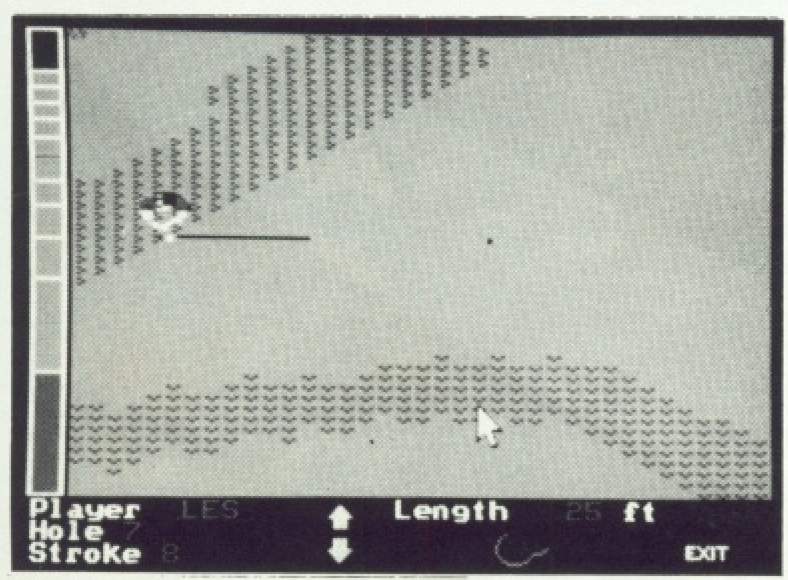
reviewed by Les Ellingham

Mean 18 comes hot on the heels of Leader Board and is another fine simulation which in some respects is better and others worse. Let's do some comparisons.

Mean 18 is played in the same way as Leader Board but offers a lot more options. The first thing to note is that the courses are based on real life courses which, to my mind, makes the game a lot more interesting. Additional course disks are promised so that eventually you may be able to travel the golf courses of the world, without leaving your front room! All the features are present on each course but the graphics, whilst still good by computer standards, are not a patch on Leader Board. They are more in the old computer 'representation' style but are nonetheless perfectly acceptable.



Looking down the fairway



On the green

MEAN 18

In this game your view is again from behind your player but the direction of the ball is chosen by clicking on an arrow which alters the perspective of the course. Each click scrolls the entire background so that you have a slightly different view down the fairway. The power and hook or slice are the same as in Leader Board except that the power bar is the full height of the screen. I found this to be a lot easier to control, both the power and 'snap' of the shot. The ball again sails down the fairway bouncing into the distance and here some of the major differences become apparent. Firstly, as an advantage, you can click on an icon to get an overhead view of the course which will show you precisely where and in which direction your ball travelled, a nice touch. In general you can get a better feel of where you are both on the fairways and on the green. The difference on the bad side is that the screen is very, very slow to redraw requiring the mouse to be clicked several times with the course fading away to the center of the screen and then re-opening. It takes about ten seconds overall but there is a noticeable 'thinking' time before the screen changes and I found it quite irritating.

Once you get on the green, the program loads an overhead shot of the green to show you the lie of the green and the position of the ball. It is much harder to judge to slope of the green and a lot more practice is required than on Leader Board to get it right. Click again and you have a 'birds-eye' view of your golfer with a solid line from the club towards the hole. You must move this line according to the lie of the green and in addition to setting the power of the shot must also control the 'snap' i.e. whether you hit the ball to the left or right. Plop down the hole and it's off to the next tee.

As well as the choice of course, you can opt to play regular or professional tees and can also practice or play any particular hole or set up a green to practice putting. You can also save a game at any point, which is excellent as a game can take quite some time and there is a Hall of Fame for you to permanently save your scorecards – two distinct advantages over Leader Board. But the biggest advantage is that you can build your own courses! A utility provided will allow you to design any course you desire, so that you can make the game as challenging or as easy as you like.

Overall the options are much wider but the realism is less than with Leader Board. Mean 18 is much more like a computer game than a realistic simulation but is nevertheless very good and will be interesting and challenging.

WHICH TO CHOOSE

Golfing addicts will prefer the real life courses of Mean 18 and the realism of action of Leader Board. Hard to choose! I personally prefer Leader Board, principally because of its 'state-of-the-art' realism but have to admit that Mean 18 plays a good game as well. Two games that are the same yet totally different. You won't be disappointed whichever you buy and they are sufficiently different to warrant buying both.

Leader Board is available in this country from US Gold at £24.95 and the Tournament disk is £9.95. Mean 18 is imported at £44.95 ●

OTHELLO

by Paul Lay

This is a version of the popular board game Othello. You play against the computer using the mouse to select your moves. The player always plays with white counters and the computer with black and each take alternate turns in placing one of their counters on the board. A counter must be placed so that it and another of the player's counters trap an unbroken line of the opposing counters either up, down, left, right or diagonally. Any runs which are trapped are then flipped over to the opposite colour. Once the board is completely filled the game ends and the winner is whoever has the most counters on the board. If at any time a counter cannot be placed on the board, then the game is aborted.

THE PROGRAM

The program is written in ST BASIC. On running the program you will be presented with a title screen on which there are two choices 'Player Starts' and 'Computer Starts'. You can begin the game by clicking on either of these with the mouse. When the game begins the board will be drawn together with a message window and an abort option. The message window displays whose turn it is and also displays the scores at the end of the game. Clicking the abort option will enable the player to abort the game on his turn, useful if you can't make a move or you are getting thrashed!

On the player's turn, clicking a square on the board will cause an attempt to place a player's piece in that square. A counter may only be placed if the square is empty and causes a run of the opposing counters to be flipped. If, on the computer's turn, no move is possible, then a message is displayed and the game aborted.

PROGRAMMER'S NOTES

One interesting point which arose during the writing of the program was that, if the desktop accessories were booted up with BASIC, then these actually alter some of the colour registers. In order to overcome this problem the colour registers should be set from within the program. This is done by the following code:

```
poke contrl,14: poke contrl+2,0: poke
contrl+6,4
poke intin,cr
poke intin+2,143*r: poke intin+4,143*g:poke
intin+6,143*b
vdisys(1)
```

where cr is the colour register (0 to 15) and r, g, b are the intensities of red, green and blue respectively in the range 0 to 7. Refer to the code starting at line 1410 for an example.

Requires ST BASIC
Runs in low resolution only

```
10   rem ****************************************
20   rem *              ST Othello              *
30   rem *                  by                  *
40   rem *       Paul Lay, August 1986          *
50   rem * ------------------------------------ *
60   rem *        runs in low resolution        *
70   rem ****************************************
80   gosub gemint: gosub init
90   gosub selectstart: gosub initboard: abort%=0:
goes%=0
100  if start%=black% then 140
110  gotoxy 20,9: ? " Player's Go "
120  piece%=white%: gosub getsquare: if abort%=1
then 90
130  gosub putpiece: goes%=goes%+1: if goes%=60
then 170
140  gotoxy 20,9: ? "Computer's Go"
150  piece%=black%: gosub computermove: if abort%=1
then 260
160  goes%=goes%+1: if goes%<>60 then 110
170  piece%=white%: gosub countpieces: ps%=total%
180  piece%=black%: gosub countpieces: cs%=total%
190  color 2: gotoxy 22,5: ? "Game Over "
200  color 6: gotoxy 22,6: ? "Player ";ps%
210  gotoxy 21,7: ? "Computer ";cs%
220  color 7: gotoxy 20,9
230  if ps%<cs% then ? "Computer Wins!": goto 260
240  if ps%>cs% then ? " Player Wins!": goto 260
250  ? " Game Drawn!"
260  color 3: gotoxy 23,16: ? " Okay? "
270  gosub mouseselect
280  if mx%>207 and mx%<262 and my%>168 and my%<176
then gosub bleep: goto 90
290  gosub buzz: goto 270
300  rem --- initialise and display the board ---
310  initboard:
320  fullw 2: clearw 2: color 1,3,1,1,1: fill 0,0
330  poke gintin,3: gemsys(78)
340  for x%=0 to 8: linef 5+20*x%,3,5+20*x%,163
350  linef 5,3+20*x%,165,3+20*x%: next x%
360  linef 172,38,298,38: linef 298,38,298,100
370  linef 298,100,172,100: linef 172,100,172,38
380  color 1,0: fill 201,39: color 8,4: fill 0,0
390  gotoxy 22,5: ? "ST Othello"
400  gotoxy 26,6: ? "by"
410  gotoxy 23,7: ? "Paul Lay"
420  color 2: gotoxy 23,16: ? " Abort "
430  for y%=0 to 7: for x%=0 to 7:
board%(x%,y%)=empty%: next x%,y%
```

```
440   piece%=white%: x%=3: y%=3: gosub putpiece
450   x%=4: y%=4: gosub putpiece
460   piece%=black%: y%=3: gosub putpiece
470   x%=3: y%=4: gosub putpiece: return
480   rem --- user square select ---
490   getsquare:
500   gosub mouseselect
510   if mx%>207 and mx%<262 and my%>168 and my%<176
then 560
520   if mx%<5 or mx%>165 or my%<26 or my%>186 then
570
530   x%=(mx%-5)/20: y%=(my%-26)/20
540   if board%(x%,y%)<>empty% then 570
550   gosub countchanges: if total%=0 then 570 else
return
560   abort%=1: gosub bleep: return
570   gosub buzz: goto 500
580   rem --- put piece on board ---
590   putpiece:
600   gosub bleep: color 1,1,1,4,piece%-1: pellipse
15+20*x%,13+20*y%,9,9
610   board%(x%,y%)=piece%: gosub updateboard:
return
620   rem --- update board ---
630   updateboard:
640   counting%=0
650   dx%=0: dy%=-1: gosub flip: dx%=1: gosub flip:
dy%=0: gosub flip
660   dy%=1: gosub flip: dx%=0: gosub flip: dx%=-1:
gosub flip
670   dy%=0: gosub flip: dy%=-1: gosub flip: return
680   rem --- flip a run of pieces ---
690   flip:
700   sx%=x%: sy%=y%: count%=0
710   sx%=sx%+dx%: sy%=sy%+dy%
720   if sx%<0 or sx%>7 or sy%<0 or sy%>7 then
return
730   b%=board%(sx%,sy%): if b%=empty% then return
740   if b%<>piece% then count%=count%+1: goto 710
750   if counting%=1 then total%=total%+count%:
return
760   sx%=x%: sy%=y%
770   while count%>0: sx%=sx%+dx%: sy%=sy%+dy%
780   for xr%=9 to 0 step -3: color 1,1,1,4,2-piece%
790   pellipse 15+20*sx%,13+20*sy%,9,xr%: if xr%=0
then 810
800   color 1,3,1,1,1: pellipse
15+20*sx%,13+20*sy%,9,xr%
810   next xr%: for xr%=0 to 9 step 3: color
1,1,1,4,piece%-1
820   pellipse 15+20*sx%,13+20*sy%,9,xr%: if xr%=9
then 840
830   color 1,3,1,1,1: pellipse
15+20*sx%,13+20*sy%,9,xr%
840   next xr%: board%(sx%,sy%)=piece%:
count%=count%-1: wend: return
850   rem --- count changes made ---
860   countchanges:
870   counting%=1: total%=0: goto 650
880   rem --- decide computer's move ---
890   computermove:
900   best%=0: for y%=0 to 7: for x%=0 to 7
910   if board%(x%,y%)<>empty% then 960
920   gosub countchanges: if total%=0 then 960
930   if x%=0 or x%=7 then total%=total%+1
940   if y%=0 or y%=7 then total%=total%+1
950   if total%>=best% then best%=total%: bx%=x%:
by%=y%
960   next x%,y%: if best%>0 then x%=bx%: y%=by%:
gosub putpiece: return
970   gosub buzz: abort%=1
980   gotoxy 20,9: ? " Game Aborted"
990   gotoxy 20,10: ? "No Legal Move!": return
1000  rem --- count pieces ---
1010  countpieces:
1020  total%=0: for y%=0 to 7: for x%=0 to 7
1030  if board%(x%,y%)=piece% then total%=total%+1
1040  next x%,y%: return
1050  rem --- select start options ---
1060  selectstart:
1070  fullw 2: clearw 2
1080  poke gintin,0: gemsys(78)
1090  color 2,5,1,3,3: linef 100,25,220,25: linef
220,25,220,58
1100  linef 220,58,100,58: linef 100,58,100,25: fill
0,0
1110  gotoxy 13,3: ? "ST Othello"
1120  gotoxy 17,4: ? "by"
1130  gotoxy 14,5: ? "Paul Lay"
1140  color 4: gotoxy 10,10: ? "  Player Starts  "
1150  gotoxy 10,12: ? " Computer Starts "
1160  gosub mouseselect
1170  if mx%<90 or mx%>225 then 1200
1180  if my%>112 and my%<121 then start%=white%:
goto 1210
1190  if my%>132 and my%<139 then start%=black%:
goto 1210
1200  gosub buzz: goto 1160
1210  gosub bleep: return
1220  rem --- good bleep ---
1230  bleep:
1240  sound 1,12,7,5,8: sound 1,0,0,0,0: return
1250  rem --- bad buzz ---
1260  buzz:
1270  sound 1,12,7,1,8: sound 1,0,0,0,0: return
1280  rem --- wait for mouse select ---
1290  mouseselect:
1300  gemsys(79)
1310  if peek(gintout+6)=0 then 1300
1320  mx%=peek(gintout+2): my%=peek(gintout+4):
return
1330  rem --- gem interface ---
1340  gemint:
1350  address#=gb: control=peek(address#):
global=peek(address#+4)
1360  gintin=peek(address#+8):
gintout=peek(address#+12)
1370  addrin=peek(address#+16):
addrout=peek(address#+20): return
1380  rem --- initialise ---
1390  init:
1400  dim board%(8,8): empty%=0: white%=1: black%=2
1410  for cr%=0 to 8: read r%,g%,b%
1420  poke contrl,14: poke contrl+2,0: poke
contrl+6,4
1430  poke intin,cr%: poke intin+2,143*r%
1440  poke intin+4,143*g%: poke intin+6,143*b%
1450  vdisys(1): next cr%: return
1460  data 7,7,7,0,0,0,7,0,0,0,7,0,0,0,7
1470  data 7,0,7,4,4,4,5,5,0,0,5,5
```

□

ST BOOKSHELF

USING ST BASIC ON THE ATARI ST

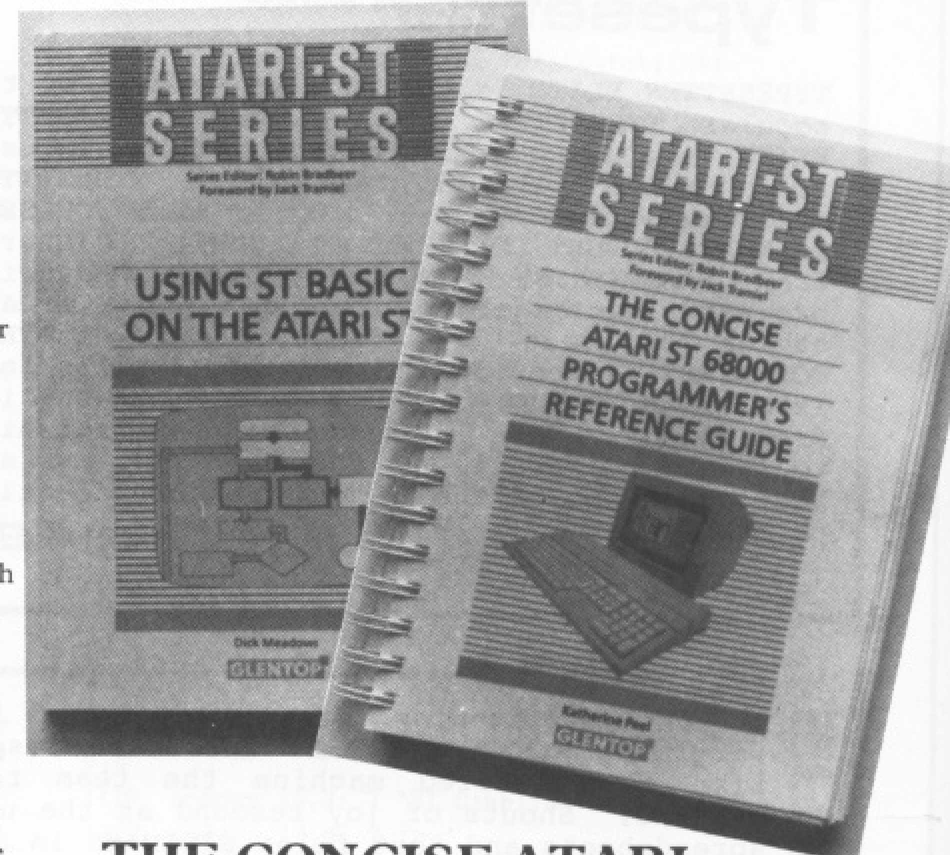
Glentop Publishing

£7.95

A book aimed at both the newcomer to programming and those unfamiliar to ST BASIC (not Atari BASIC as it states on the cover), this is a neat comprehensive book at a good price. A lot cheaper than most others available.

In this case, cheapness does not mean lack of quality for the 190 pages are packed with solid information, diagrams, example programs and exercises. The book follows the pattern of introducing the reader to the language and then beginning to write programs with each successive chapter introducing more and more complex commands. All the BASIC keywords are covered but rather than just give a brief explanation each is described in circumstances in which it might be used with a small example program included. At the end of each chapter exercises are presented to test your grasp of the concepts in that chapter. The answers are provided at the end, or at least suggested solutions, for, in computer programming, a problem can often be solved by different means. At the end of the book several ready to run programs, of the more serious kind such as conversions and calculating programs, are included for you to use or improve.

It is difficult for someone who already knows how to program in BASIC to judge just how good a particular book is but this one follows the pattern I used several years ago to learn Atari BASIC and which I found particularly successful. The book I used all those years ago cost twice the price and at £7.95 I would not hesitate to recommend this to any newcomer to the Atari.



THE CONCISE ATARI ST 68000 PROGRAMMER'S REFERENCE GUIDE

Glentop Publishing

£15.95

The book that anyone interested in programming the ST has been waiting for, and it is as comprehensive as its title! Written in the U.K. by one of the few lady computerists, Katherine Peel, who has written in-depth articles for one of the major UK magazines, it surpasses anything yet published in the States and is destined to become a standard reference.

Much of the information is distilled from the ST Developers Kit but it has been expanded and enhanced and presented in a much more readable form. It is not a book for beginners but anyone who can write, or even dabble, in C or Assembly should have a copy as an essential reference. It begins with a general description of the ST hardware and includes pin diagrams of all the expansion ports and interfaces together with information on all of the processors and internal controllers. An overview of TOS comes next with full details of graphics, sound, GEMDOS and the various interfaces such as the keyboard and floppy disk interfaces. GEM BIOS calls, Extended BIOS calls, BDOS calls, VDI functions, Input functions, Inquire functions, all and a lot more are documented. It is impossible in a review to state just how much information there is.

Ten appendices provide all the reference material you might need whilst another gives recommendations, compatibility and comparisons of the various ASSEMBLERS available. The book is rounded off with sample programs documented for several Assemblers.

If you had an 8-bit Atari, then this could be considered the equivalent of the famous Technical Users Notes. It is surely essential to anyone who does not have access to the Developers Notes but who seriously wants to program the ST. I don't know how many pages there are (they are numbered in sections) but it is about an inch thick and worth every penny of the price. ●



ATARI ST

Power Without The Price!

520ST PACKAGES

The 520ST-M keyboard costs only £346.96 (+VAT=£399) and includes an RF modulator and cable, allowing you to connect it to an ordinary domestic TV set. The keyboard is supplied with 512K RAM, a mouse and a free set of 3½" disks containing applications software. For a limited period from August 11th 1986, we have some special packs offering combinations of the 520ST-M keyboard with a ½ Mbyte SF354 Atari disk drive and an Atari monitor (either the Mono SM124, or Colour CM36512). These packages offer up to £200 extra discount on a system. If purchased from Silica, they also come with our free 'ST STARTER KIT'. All of the pack prices shown in the chart include VAT.

UPGRADE TO 1024K RAM

We are pleased to be able to offer a 1Mbyte upgrade on the standard 520ST keyboard to increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £86.96 (+VAT=£100). Any of the five packs can be upgraded to 1Mbyte for only £100. The 1Mbyte ST offers a low price alternative to the 1040, but also gives you the benefit of an RF modulator (not normally fitted on the 1040).

£100 DISCOUNT 1 DISK DRIVE	ALL PACK PRICES INCLUDE VAT	**PACK 1** Keyboard £399 Disk Drive £149 *Normal Price* £548 *Discount* £100 **Pack Price £448**
£150 DISCOUNT 2 DISK DRIVES + MONITOR	**PACK 2** (MONO) Keyboard £399 Disk Drive £149 Disk Drive £149 Mono Monitor £149 *Normal Price* £846 *Discount* £150 **Pack Price £696**	**PACK 3** (COLOUR) Keyboard £399 Disk Drive £149 Disk Drive £149 Colour Monitor £299 *Normal Price* £996 *Discount* £150 **Pack Price £846**
£200 DISCOUNT 2 DISK DRIVES + MONITOR + PRINTER	**PACK 4** (MONO) Keyboard £399 Disk Drive £149 Disk Drive £149 Mono Monitor £149 Printer (SMM804) £199 *Normal Price* £1045 *Discount* £200 **Pack Price £845**	**PACK 5** (COLOUR) Keyboard £399 Disk Drive £149 Disk Drive £149 Colour Monitor £299 Printer (SMM804) £199 *Normal Price* £1195 *Discount* £200 **Pack Price £995**

REDUCED PRICES

Atari's ST personal computers are now firmly established both in the USA and Europe. The main attraction of the ST range is the value for money which these computers represent, giving both private and business users a powerful asset at a very modest price. There are now several ST packages available from Silica at a reduced price, further enhancing the Atari 'Value for Money' reputation. In addition, we are giving away a FREE Silica 'ST STARTER KIT' with every 520 or 1040 ST purchased at Silica Shop. These offers will only be available for a limited period and commence on 11/8/86.

POWER FOR BUSINESS

The list below shows some of the new business products which have been recently launched for the Atari ST range. It gives an indication of the ST's potential to business buyers looking to install a powerful, low-cost system:

CP/M EMULATOR
20Mbyte HARD DISK
LOTUS 123™ CLONE
dBASE III CLONE
IBM COMPATIBILITY
VT100 EMULATOR
MICROSOFT WRITE
dBASE II

Any ST computer will provide its user with a very powerful asset, utilising a vast range of applications, particularly in the business world. Many software companies have been quick to recognise it for its business potential, and have produced programs for the ST which harness this potential. In addition, there are several peripheral and hardware products becoming available to add to the ST's 'Power For Business'. Software now available includes dBMan, a dBASE III clone as well as H&D Base, a dBASE II clone. In fact, First Software have now launched Ashton Tate's original dBASE II program for the ST. In addition, PC Intercomm is a VT100 emulator which enables you to use any ST keyboard as a terminal connected to a mainframe or mini. Other programs include a powerful accounts package by Cashlink and a Lotus 1-2-3™ clone called VIP Professional. Microsoft have announced that their powerful word processor 'Microsoft Write' will soon be available for the ST. Many packages are available for very specific market applications including a powerful CAD (Computer Aided Design) program called Easy Draw from Migraph. In addition, there is an engineering tool called PC Board Designer by Abacus Software which will enable the user to design printed circuit boards. For further details of how the ST can help in your business, return the coupon below. We will be pleased to send you our latest newsletter and price list.

PRICE MATCH PROMISE

We hope you will find that the combination of our low prices, FREE delivery service, FREE Starter Kit and after sales support, will be enough to make you buy your Atari equipment from Silica Shop. If however, there is something you wish to purchase, and you find one of our competitors offering it at a lower price, please contact Owen Pascoe (Office Manager), or one of the telesales staff in our sales department. When you telephone us, please provide us with our competitors name, address and telephone number. Providing our competitor has the goods in stock, we promise to match his offer (on a 'same product - same price' basis) and still provide you with our normal free delivery. You will also be entitled to our full after sales service, including free newsletters and technical helpline support. We don't want you to go anywhere else for your Atari products. So shop at Silica, the U.K.'s undisputed No1 Atari specialist.

FREE SOFTWARE

When you buy a 520 or 1040 ST computer keyboard from Silica Shop, you will receive a large and varied software package free of charge. This package consists of twelve programs. Wherever you purchase your Atari ST computer, you should receive the first six software titles as standard. However, if you purchase your ST from Silica, you will also receive a further six extra titles, giving you a total of twelve. All ST's now have TOS/GEM already installed on ROM, so the list of free software you should receive is as follows:

1) GEM - *DR Desktop environment with WIMP (fitted in ROM)*
2) TOS - *Tramiel Operating System (fitted in ROM)*
3) 1st WORD - *Word Processor by GST using GEM*
4) BASIC - *Personal Basic by DR (with manual)*
5) LOGO - *Logo language by DR (with manual)*
6) NEOCHROME - *A powerful colour paint and graphics package (only useable with colour systems)*

If you purchase your ST from Silica, not only will you receive the standard six pieces of software as listed above, but we will also give you the following six additional programs FREE OF CHARGE:

7) MEGAROIDS - *Asteroids type game by Megamax*
8) DOODLE - *Simple paint/doodle drawing package (works on mono or colour systems)*
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SABRE LABEL/ SABRE BASE

Sabre Soft
48k Disk

Reviewed by Alan Goldsbro

After Word processing, Databases are the most popular of the serious applications available for computers and for programmers and others keeping track of your disks and producing mailing labels ranks high amongst priorities. Sabre Soft has brought out a product that effectively covers both of these requirements. Both programs are for the XL/XE/400/800 range and, requiring BASIC are available on a double sided disk.

SABRE LABEL has three sections, Address Labels, Binary Labels (Disk Directory) and Miscellaneous Labels.

Booting up the program takes you only a minute, through the title screen onto a menu using an altered character set which is quite readable. Selecting any one of the above sections will take you through a well planned and trapped procedure. The address section for instance will allow you to create a label of up to forty characters wide and five lines deep. Editing facilities are available at all times with verification on many points. Any number of labels from 1 to 100 can be printed using a range of different print styles. Labels can be saved to disk for future use and merged with a word processor if required.

Of the other two options, Binary Label function will read a DOS 2 or 2.5 disk directory with or without your choice of title and disk number and Miscellaneous Labels gives you eight lines to type in your own detail or any kind. All labels may be saved to Disk and the program will accept printer codes inserted into the label area to configure individual lines of text to for mixed print styles.

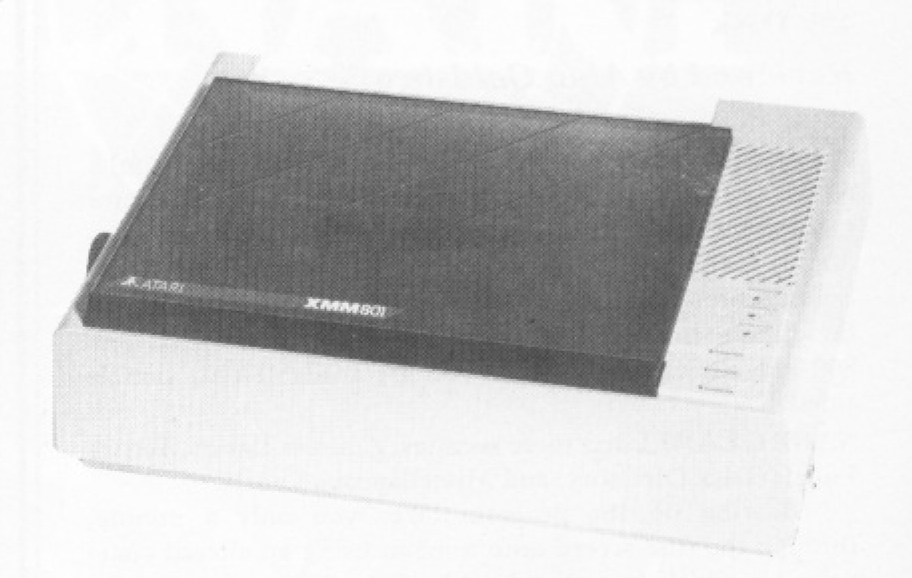
SABRE BASE is a menu driven system to read data from your program disks or catalogue Binary or Multi boot type disks. The main menu is made up of a number of items which allow you to input data, store, sort, search, retrieve and print data, create data disk, delete data, send data to text file and set up RAM disk. Up to four different data file names may be held on each disk.

Without going into too much detail, this program will take all the hard work out of creating and maintaining a database of your programs on disk. With full sort, both numerically and alphabetically and a comprehensive search facility, the program even has printer control. Sabre base will allow you the luxury of 'listing' the database to disk in an ASCII format suitable for merging into most word processors.

The label program worked well indeed, giving a range of printer styles and control. I found the program well trapped and friendly to use. Sabre Base unfortunately proved to be difficult to load, my review copy could only be loaded through DOS. It actually took a couple of minutes to boot up, unfortunately I have no idea whether this was a design fault or the disk being corrupted however the program was well trapped and easy to use. The sort feature was a little slow, it took two minutes to alphabetise thirty-five entries but the Search facility was much faster taking only five seconds on average to find your selection.

Overall I thought the program was good value for money at only £4.95 for a double-sided disk with a surprisingly well written 34 page manual. Available by post only from Sabre Soft of Cambridge.

THE ATARI XMM801 PRINTER



reviewed by Rob Anthony

Firstly I would like to say that the appearance of this printer says a lot for Atari, it seems that they do listen to us. Just a few months ago people were saying 'Yes but now the ST range is out, Atari, and just about everyone else has abandoned the 8-bit users' and when the ST range appeared I must admit that I thought the same. But no, Atari have proved us all wrong and the appearance of this particularly good printer will hopefully herald Atari's commitment to the 8-bit range.

Until now, all the Atari printers have been rough and ready affairs so what would make you go out and buy another one? Let's first take a look at the other printers still available from Atari and then go on to discuss the virtues of the XMM801.

The 1029 looks and behaves too much like the Commodore MPS801 for my liking, in fact it is, together with an Amstrad model, the same design with the software inside the printer altered to suit. It can do screen dumps, with the right software, it is compact and functional and, although the print quality isn't great, it's okay if you use a new ribbon every 20 or 30 pages. It is however fairly old technology and its main advantage is the price of around £119 or less which is excellent for any dot matrix printer. The 1029 will still suit youngsters who want to use it for screen dumps and those who want program listings and are not too worried about the overall look of any text processing they do.

As for the 1027, well how Atari got themselves mixed up in this I don't know. It works okay, if you use fairly heavy paper (I use 80 gram photocopy paper) and you may even get your print in fairly straight lines most of the time!. It is my firm belief that Atari should have concentrated on replacing this, rather than the 1029 because, although the XMM801 is a fine printer is is *not* a Letter Quality printer. I suppose though that the one thing in the 1027's favour is its price as no other true Letter Quality printer comes remotely near the price.

So on to the XMM801 which is a beautifully designed and crafted machine. It matches the 130XE perfectly, being the same shade of grey over its main body with a black translucent cover. The cover is, unfortunately, quite difficult to see through so you may remove it if you wish as the printer is fairly quiet anyway. Do remember to replace it after use though as it is primarily a dust cover for the delicate machinery inside.

There are a set of 3 keys and 3 LED's on the top in the right hand corner which are, from back to front, Power, No Paper and On Line. In front of the On Line lamp is a key which acts as a toggle between on and off line with the LED glowing when the printer is ready. There are Line Feed and Form Feed keys in front which are disabled when the machine is On Line. The dimensions of the printer are 4½ inches (113mm) high by 15½ inches (394mm) wide and 13½ inches (347mm) deep. It weighs less than 11 pounds. With only 8 pins on the head it manages an 8 × 9 matrix and the head can survive over 30,000,000 characters.

The new printer is virtually an Epson. The manual tells you so and dumping those masterpieces to this printer should not prove too difficult as several screen dump programs have been published in magazines over the years. Be warned though that several printers that claim 'full Epson compatibility' are often only 98% compatible and could hang on some commercial programs. I have not had the opportunity to test this on every program on the market!

Either friction or tractor feed can be used but if you want to use telex rolls you will have to get yourself a pair of scissors as there is no paper cutting facility on the cover or elsewhere. An unusual feature, which it shares with the 1029, is that the plastic lid covering the platen pulls up from the back to the front making it necessary to remove the cover to replace ribbons. As the cover has no practical function other than a dust cover, perhaps it would have been better to have hinged it at the rear.

None of the Atari printers use the same ribbon. The ribbon for the 1029 is fairly easy to get hold of, at £3.95 from Boots, and although the manual says the XMM801 ribbon is specifically designed, it should also be pretty standard at around £5 or less. An annoying feature about the machine is that it prints dead centre on the ribbon so that a twist in the ribbon will not give it a longer life. Ribbons for the 1029 and XMM801 can be re-inked at about a third of their cost if you can find the right company to go to. The XMM801 also comes with a carbon ribbon which allows exceptionally high quality print but which of course has to be thrown away after one run through.

To load the paper, you need the paper release in the friction position, high, but to use the tractor it must be in the low position. You will need fairly slim fingers to change the paper easily as this lever is squeezed between the outer case and the edge of the carriage, mind you don't cut yourself on the metal paper guide! All that was needed to fix this problem was for Atari to put a small handle on top of the selector. There is no tension release for changing the ribbon and the print head is fairly tight against the platen.

If you want to use single sheets you will have to disable

the paper out sensor which can be done from within your text file by sending ESC O. Unfortunately when I tried it, the printer put a couple of extra line feeds in just where it would have sounded the alarm.

Now why is this machine so special that it commands £50 more than the 1029? Well, firstly, it is Epson compatible and many people swear by this standard. It is a fully featured, bi-directional, 80 cps, 480 dot per line (960 in high density graphics mode) NLQ matrix printer with lots and lots of features. It has double strike (NLQ), bold, double width, condensed, Elite and Pica, normal and high density graphics modes, can backspace and print a second character over a first. The Atari International character set is supported, there is a paper out sensor, it can scroll from 1/6 th of an inch to 1/216 of an inch. It will support proportional spacing in Elite mode, has superscripts and subscripts, definable bi- or uni-directional printing and can control the platen in both directions, feeding the paper forwards or backwards. There are also up to five tabulation stops which can be set individually.

All in all this is an excellent machine that has features which most of the better word processors can use to the full. Add a couple more 'features', its price of £175 and the fact that you don't need an interface and I am sure that this must be the printer for any Atari owner who wants good quality print. Even if you already have an interface you will be hard pressed to match the quality at this price and if you have to fork out £60 odd for an interface on top of the price of a third party printer, there is surely no contest!

Print examples

```
This is the standard font, known as Pica
which is here underlined.
now it is bold printed,
and is now in double strike,
and how about proportional spacing.

Here we have the ultimate, underlined, bold printed,
proportionally spaced, double strike.

Pica text can be superscripted or subscripted.
& can be Condensed and half Expanded.

How about Expanded Condensed!


Of course, there is an alternative font if you prefer.
Elite.
This can, of course, be underlined.
how about choosing double strike.

Naturally, you can mix these if you wish.


Elite can also handle Expanded text.

      e linefeeding is permitted.
     s
    r
   e
  v
 e
R
              e linefeeding
            s
          r
        e
As is half v
```




ADJUST IT!

Did you check out SPEED CHECK last issue? If you have problems with your drive Garry Francis now tells you how to adjust it.

As a follow on from last issue's Speed Check program, let's take a look at the symptoms of an incorrect drive motor speed, ways of testing it and ways of adjusting it.

SYMPTOMS

As you are probably aware, an Atari formatted disk consists of 40 tracks. Each track is divided into 18 sectors of equal size. Each sector has 128 data bytes – this is the data that you normally read or write to disk. What you may not know, is that there are a number of extra bytes at the beginning and end of the data bytes. These are not accessible to us, but are used by the drive's disk controller for indicating track number, sector number, cyclic redundancy checks (similar to checksums) and various dummy bytes to ensure the integrity of each sector. In addition, each track has an extra very narrow 'sector' used as an index to define the start of the track.

All this information is written to the disk when it is first formatted. However, if the disk is spinning too fast, some of the important housekeeping information may be overwritten. This results in improper formatting which might not be detected at formatting time. This will show up at a later date with the occurrence of Device Done Errors (ERROR 144). A fast drive may also have trouble writing to a disk formatted at a slower speed, as it will overwrite the space allocated on the disk.

On the other hand, if the drive speed is too slow, the data will be packed closer together and becomes hard to read by a drive operating at normal (or fast) speed. You may not be aware of this problem until somebody with a faster drive has trouble trying to read your disks (although slow drives can usually read disks formatted at faster speeds). The inside tracks (i.e. closer to the centre) are the first that are likely to fail due to the closer packing of data.

Other errors may also occur, but these are the most common.

TESTING

You should test the speed of your drive at least once a month. If you use it a lot, then increase the frequency of the tests. A commercial software developer should probably test it once a week! It is also important to check the speed before a formatting session, as this is when it is most critical.

Keep in mind that drives tend to spin faster when they are first turned on and slow down slightly as the internal mechanisms warm up with use. You should therefore test the drive's speed at a time most appropriate to your usage habits.

I am aware of 3 different ways of testing the disk motor speed. The first method is the one used by Atari as outlined in their service manuals. For example, see pages 7-9 to 7-10 of the Atari 810 Service Manual. This method requires some fancy equipment (such as an oscilloscope) which makes it impractical for the average user. It measures the disk speed indirectly by measuring the current travelling from the drive motor's generator. The measured value is then compared with the optimum value listed in a table. If it differs, then the speed needs adjusting.

The second method is to use a stroboscope. The manufacturers of disk drives often include this on the flywheel of the drive. In the case of the 810, if you remove the top and bottom covers of the drive and turn it upside down, you will see a large circular hole in the metal baseplate. Through this hole, you can clearly see the large flywheel that the drive belt passes around. Attached to the flywheel is a stroboscope with two concentric rings of markings. The innermost ring is marked '50' for 50Hz power supplies such as Australia and the U.K. The outermost ring is marked '60' for 60Hz power supplies such as the United States. You will note that they differ in the number of markings. The 50Hz scale has 20 markings and the 60Hz scale has 24.

The stroboscope works by flashing a light on it while the drive is spinning. The flash rate should be the same as the power supply (i.e. 50 times per second for Australia and the U.K. or 60 times per second for U.S.A.). A fluorescent light is usually good enough to do the trick. If the scale appears to be stationary, then the speed is correct. If the scale appears to be slowly moving, then the speed needs adjusting.

Unfortunately, in the case of the 810, some quick calculations reveal that the stroboscope is totally useless. The reason for this is that the drive was originally designed to spin at 300 r.p.m. (and the stroboscope designed to suit), but Atari have adapted it to run at 288 r.p.m.

I tried making my own stroboscope to test for 288 r.p.m., but it proved to be a huge flop.

The third method is, of course, to use a software driven speed tester such as Speed Check from last issue. You don't have to disassemble your drive, it does not require any extra hardware, it is reliable and it is remarkably simple to use. See last issue for complete details.

If any of the tests indicate that your drive is operating at the incorrect speed, then you'd better correct it quickly. There are two options open to you. You can take it to your nearest Atari Service Centre and get it fixed by a qualified technician or you can fix it yourself.

ADJUSTING DISK SPEED

Adjusting the drive speed is a ridiculously simple job. If you follow the instructions below, you should have no trouble. There are already thousands of users adjusting the speed of their own drives.

There are only two points to keep in mind. Firstly, adjusting your own drive may void any warranty you have on it and secondly, neither the author nor PAGE 6 will accept any responsibility for damage you cause if you do the wrong thing. Use your common sense. If you don't feel confident of adjusting the speed, then don't do it! Take it to an authorised Atari Service Centre.

The Atari disk drive has had a turbulent history, in which it has gone through a number of changes. The original Atari 810 was plagued with problems from the day it was introduced. To Atari's credit, they made several modifications to improve the drive's performance, including a revised file management system (DOS 2.0), the addition of a data separator board and the Revision C ROM chip. If you have one of these early drives, see the instructions given under 'Early Atari 810'.

After a couple of years, an extra printed circuit board was added to the framework above the read/write head. Its function was to regulate the disk motor speed. This was in recognition of one of the drive's most common problems – it tends to drift from the correct speed. If you open up your drive and find that it has one of these boards, then you should use the instructions given under 'Late Atari 810'.

In the Morgan era, Atari replaced the aging 810 with the lower profile 1050. If you have one of these drives, then use the instructions given under 'Atari 1050'.

Before you start, you will need:

A pointy-bladed knife
A medium sized Philips head screwdriver
A medium to small sized slot screwdriver
A copy of Speed Check
About 10 minutes of your precious time

Ensure that all tools are free of magnetism. (If a screwdriver can pick up a single pin or staple, then it is magnetised.)

EARLY ATARI 810

1. Prepare a clean, dust-free environment to work in. Stray bits of dust, hair and other foreign particles can cause damage to the disk drive.
2. There are 4 circular self adhesive tabs covering the screwholes at each corner of the top cover of the drive. Remove these using a pointy-bladed knife or similar pointed object. Upon removal, these tabs take on a life of their own. They love sticking to shirt sleeves and anything else that comes within range of them, so put them aside in a safe place.
3. Use a medium sized Philips head screwdriver to remove the screws in each of the 4 holes.
4. Remove the cover by lifting it straight up and place it to one side.
5. While the cover is off, take a good look around inside to familiarise yourself with what things look like and where they're located, but do not touch anything unless you know what you're doing.
6. Lying flat at the back of the drive is a printed circuit board known as the rear board or power board. Locate the potentiometer labelled R142 in the back left hand corner of this board. It is a plastic disc about 15mm diameter with a slot through the centre. It is usually milky white in colour, but some sources have quoted models that are blue.
7. Run Speed Check. It's okay to run the drive with the cover off, just be careful not to touch anything.
8. Carefully place the slot screwdriver in the slot of the potentiometer without touching any other components. Turn the potentiometer clockwise to slow the drive down or anti-clockwise to speed it up. You only need to turn it in tiny increments.
9. Check the test results being displayed on the screen by Speed Check If the results are not consistently in the green region, then repeat step 8 until they are.
10. Replace the drive cover and check the test results one more time before screwing it in place.

LATE ATARI 810

1-5. As for the early 810.
6. These drives are identified by the extra printed circuit board mounted above the drive mechanism. Locate the potentiometer labelled R104 which should be to the left of the only integrated circuit on this board. It is usually green with a small screw head protruding from the top.
7-10. As for the early 810.

ATARI 1050

1. Observe the precautions outlined in 1 above.
2. Remove the power and I/O cords.
3. Turn the drive over and remove the four sunken screws at each corner together with the two at the front holding the front plate.
4. Turn the drive right way up and remove the top cover by lifting it from the back and sliding it forward to disengage the front plate. It is important to move the front panel forward as you may otherwise break the plastic lugs connecting the front panel to the top.
5. Follow the precautions in 5 above.
6. The potentiometer is a small blue upright box on the left (as you look towards the rear) side of the circuit board at the back of the drive. It is labelled VR2. There is a small screw on the top which may be covered with some sort of sealant. If so, you must chip this away *carefully* with a sharp screwdriver or knife. *Be very careful*. The sealant is quite hard and it is easy to slip and damage other components. Take your time. This is the only step where a heavy hand could cause damage.
7. Carefully re-insert the power cord and I/O lead, switch on and run SPEED CHECK.
8. If the results of Speed Check show a variation of speed from 288 r.p.m. insert a small screwdriver in the screw on the potentiometer to adjust the speed. Turning anti-clockwise will slow the drive down and clockwise will speed it up.
9. When you are satisfied, switch off the drive and replace the top cover by placing it on the drive with the front overlapping and then sliding it back, ensuring that the two lugs on the bottom of the front panel engage with the slots on the case. Finally turn the drive over and replace the screws.

If on any model you find that you cannot achieve the correct speed or the speed varies or is consistently slow shortly after adjustment, then you may have a hardware problem. This could be due to a stretched or incorrectly tensioned drive belt, a bad write protect circuit or drive motor circuit, the drive motor tach line is out of place or the spindle bearings are freezing. In any case, take your drive to the nearest Atari Service Centre for repairs.

Good luck!

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LIST 1029

by Eddie Cross

```
LIST*.*          PAGE  1

1 REM *******************************
2 REM *          LIST 1029          *
3 REM *              by             *
4 REM *         Eddie Cross         *
5 REM * --------------------------- *
6 REM *  PAGE 6 MAGAZINE - ENGLAND
7 REM *****************************
8 REM
10 REM  FILE MUST BE IN LISTED FORM
20 REM
40      M PROG$(15),FILE$(12):LL=38:
PL=60:PK=PEEK(559):? "↰"
45 ? "▶ LIST TO 1029 PRINTER "
46 ? "▶ BY EDDIE CROSS (C) 1986 ":?
50 TRAP 250:? "LENGTH OF LINE ?";LL;"←
←";:INPUT LL:IF LL=0 THEN LL=38:GOTO
50
60 ? "LINES F
T PL:IF PL=0
70 PROG$="D1
LIST ";:INPU
)=FILE$
90 TRAP 250:C
8,0,"P:":PAGE
100 L=0:? #2:
";PAGE;"€."
110 ? #2,:FOR
120 TRAP 310:
130 IF (A)=0
23 OR (A)=128
ND A<=255) THEN GOSUB 360:GOTO 210
140 IF (A)=28 AND A<=31) OR (A)=125 AN
D A<=127) THEN GOSUB 330:GOTO 210
200 ? #2;CHR$(A);
210 IF A=155 THEN 230
220 NEXT C:? #2;CHR$(155);
230 L=L+1:IF PL=L THEN ? " NEW PAGE
Press <RETURN>":GOSUB 320:PAGE=PAGE+1:
GOTO 100
240 GOTO 110
250 ERR=PEEK(195):LINE=PEEK(186)+256*P
EEK(187):POKE 559,PK:CLOSE #1:CLOSE #2
:FILE$="":? "↰"
260 IF ERR=138 THEN ? "Check Hardware
                 :GOTO 70
270 IF ERR=170 THEN ? "File not found"
:? :GOTO 70
280 IF ERR=165 THEN ? "Filename Error"
:? :GOTO 70
290 IF ERR=144 THEN ? "Disk not Insert
ed or Locked in":? :GOTO 70
295 IF ERR=8 THEN ? "Input Error State
ment":? :GOTO LINE
300 ? "Error <";PEEK(195);"> at line "
;LINE:? :GOTO 50
310 CLOSE #1:CLOSE #2:POKE 559,PK:TRAP
 40000:? :? "FINISHED <";FILE$;"> PRIN
TED":? :FILE$="":GOTO 50
320 POKE 559,PK:OPEN #3,4,0,"K:":GET #
3,K:CLOSE #3:POKE 559,0:RETURN
```

```
TEST.1           PAGE  1

10 REM LIST 1029 TEST
20 REM ABCDEFGHIJKLMNOPQRSTUVWXYZ
30 REM ABCDEFGHIJKLMNOPQRSTUVWXYZ
40 REM abcdefghijklmnopqrstuvwxyz
50 REM abcdefghijklmnopqrstuvwxyz
60 REM 1234567890
70 REM !"#$%&'@()<>
80 REM ↑↑↑↓↓↓←←←→→→
90 REM TEST COMPLETE
```

Anyone who purchased the 1029 printer to enable them to debug programs will almost certainly be disappointed in that it does not print anything like the *full* range of characters that appear on the TV screen. All is not lost, however, as the 1029 is capable of both Bit Image Mode and International Character mode which together can be used to print those 'unprintable' characters.

The accompanying program can be used to print any program that has been LISTed to disk and will show all control characters as well as inverse characters in much the same way as the listings in PAGE 6. The program to be printed *must* be in LISTed form on disk. Just run the program and follow the prompts. The length of line for the printer is requested, defaulting to the normal screen width of 38 but this can be overtyped. The number of lines per page can also be similarly altered. Enter the filename to be printed without using 'D:' or quotation marks. The program will default to drive 1. When the file has been located, the screen is turned off and printing begins.

Once the number of lines per page has been reached the screen is turned on and the message 'NEW PAGE' appears. You may now adjust the paper or insert another sheet before pressing RETURN to continue.

The listing is offset from the left margin by using a standard tab (',') in line 110 which will allow for hole punching for storage and the page heading and page numbering is printed in double width.

For those who would like some more information on how the program works I will provide some brief notes.

FORMING CHARACTERS

Firstly it is important to understand how characters are formed in Bit Image Mode. The printed character is made up of a matrix of 7 dots high by 5 dots wide (compared with a screen image of 8 pixels high by 8 wide). In Bit Image Mode it is possible to address single dots column by column. Standard binary is used but as the matrix is only 7 dots high only a maximum of 127 can be used in each column. This would give a full vertical line.

Each of the 5 columns is constructed as follows:

Top dot	...	64
	...	32
	...	16
	...	8
	...	4
	...	2
Bottom	...	1

To construct a line of dots in the first column of, say, the top, second to bottom and bottom rows, simply add up the

continued overleaf

values for each row and write this as a DATA statement:

10 DATA 69

Now repeat for all five columns to build up the necessary shape of the character:

10 DATA 69,111,65,13,127

An additional point to note is that although the 1029 uses five columns for a character it normally also prints a sixth blank column to separate the characters and this rule must be obeyed in order to use the Bit Image Mode to print alternative characters. So, a 6th line of dots (in this case no dots) must be added so the data must end in 0:

10 DATA 69,111,65,13,127,0

BIT IMAGE MODE

To put the 1029 in Bit Image Mode it is necessary to send the code ESC ESC A to the printer. This must be followed by the Most Significant Bit (MSB) and the Least Significant Bit (LSB) denoting the number of rows of data to be sent to the printer. In this case, since we have only 6 rows of data the MSB=0 and LSB=6.

The routine for sending the Bit Image data is in lines 360 to 420 of the program:

Line 360 sends the instruction to Set Bit Image Mode, MSB and LSB.
Line 370 selects the DATA line that contains the matrix to be printed. It is 1000 plus the ATASCII code for a particular character. For example, the ATASCII code for Inverse CONTROL B is 130 so line 1130 contains that data. Lines 380 to 410 read the DATA statement and prints the individual columns of selected dots. Line 420 returns to the main program to find the next character to be printed.

INTERNATIONAL CHARACTERS

So much for 'non-standard' characters but there are in fact several characters that the 1029 can print without using the Bit Image Mode and constructing DATA statements. These are included in the 'International Character Set' and include such characters as 'clear screen' and 'cursor arrows'.

These can be printed simply by putting the 1029 into International mode by sending the codes ESC CONTROL-W to turn on the mode and ESC CONTROL-X to turn it off. Line 330 of the program does this.

The heart of the program lies between lines 120 and 220. Each character to be printed is read from the disk (GET #1,A) and the ATASCII value is checked. If the character is not one which can be printed normally, the program goes to the subroutine for either Bit Image Mode or International Mode as appropriate. If the character is standard the program continues to line 200 where it is printed as normal.

One slight drawback is that some characters, being normally 8 bits wide are difficult to fit into a 5 dot matrix so the sixth dot has to be used and the spacing is lost. The results however are still quite legible.

I hope that 1029 owners will find new uses for their printer with the information in this article and program. It should be quite simple, for instance to print the elusive £ sign with a little thought. Remember it is ATASCII code 8 or CONTOL-H in International mode.

```
WO 1 REM ******************************
KN 2 REM *        LIST 1029           *
LU 3 REM *           by               *
LS 4 REM *       Eddie Cross          *
SR 5 REM * -------------------------- *
RV 6 REM *  PAGE 6 MAGAZINE - ENGLAND
WU 7 REM ******************************
NN 8 REM
YR 10 REM  FILE MUST BE IN LISTED FORM
AZ 20 REM
MS 40 CLR :DIM PROG$(15),FILE$(12):LL=38:PL=60:PK=PEEK(559):? "K"
AO 45 ? "▶  LIST TO 1029 PRINTER    "
SM 46 ? "▶ BY EDDIE CROSS (C) 1986 ":?
VS 50 TRAP 250:? "LENGTH OF LINE ?";LL;"←←←";:INPUT LL:IF LL=0 THEN LL=38:GOTO 50
QO 60 ? "LINES PER PAGE ?";PL;"←←←";:INPUT PL:IF PL=0 THEN PL=60:GOTO 60
XW 70 PROG$="D1:":FILE$=" ":? "  FILE TO LIST ";:INPUT FILE$:PROG$(LEN(PROG$)+1)=FILE$
AG 90 TRAP 250:OPEN #1,4,0,PROG$:OPEN #2,8,0,"P:":PAGE=1:POKE 559,0
MO 100 L=0:? #2:? #2,"E_";FILE$;"   PAGE ";PAGE;"E_":? #2
IF 110 ? #2,:FOR C=1 TO LL
ZA 120 TRAP 310:GET #1,A
UF 130 IF (A>=0 AND A<=27) OR A=96 OR A=123 OR (A>=128 AND A<=154) OR (A>=156 AND A<=255) THEN GOSUB 360:GOTO 210
UG 140 IF (A>=28 AND A<=31) OR (A>=125 AND A<=127) THEN GOSUB 330:GOTO 210
DT 200 ? #2;CHR$(A);
AT 210 IF A=155 THEN 230
IL 220 NEXT C:? #2;CHR$(155);
WP 230 L=L+1:IF PL=L THEN ? " NEW PAGE Press <RETURN>":GOSUB 320:PAGE=PAGE+1:GOTO 100
MA 240 GOTO 110
OC 250 ERR=PEEK(195):LINE=PEEK(186)+256*PEEK(187):POKE 559,PK:CLOSE #1:CLOSE #2:FILE$="":? "K"
OC 260 IF ERR=138 THEN ? "Check Hardware is ON":? :GOTO 70
TE 270 IF ERR=170 THEN ? "File not found":? :GOTO 70
YB 280 IF ERR=165 THEN ? "Filename Error":? :GOTO 70
NX 290 IF ERR=144 THEN ? "Disk not Inserted or Locked in":? :GOTO 70
VE 295 IF ERR=8 THEN ? "Input Error Statement":? :GOTO LINE
JL 300 ? "Error <";PEEK(195);"> at line ";LINE:? :GOTO 50
LN 310 CLOSE #1:CLOSE #2:POKE 559,PK:TRAP
```

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```
 40000:? :? "FINISHED <";FILE$;"> PRIN
 TED":? :FILE$="":GOTO 50
TO 320 POKE 559,PK:OPEN #3,4,0,"K:":GET #
 3,K:CLOSE #3:POKE 559,0:RETURN
GM 330 ? #2;"␛T";CHR$(A);"␛⊥";:RETURN
SH 340 REM ***     PRINT CHAR. ***
KI 350 REM *** IN BIT IMAGE MODE ***
NJ 360 ? #2;"␛A";CHR$(0);CHR$(6);
OC 370 RESTORE 1000+A
UA 380 FOR X=1 TO 6
UE 390 READ D
FO 400 ? #2;CHR$(D);
LQ 410 NEXT X
ZE 420 RETURN
SI 1000 DATA 24,60,30,60,24,0
UF 1001 DATA 0,126,126,24,24,0
UH 1002 DATA 0,0,0,126,126,0
IR 1003 DATA 24,24,120,120,0,0
SN 1004 DATA 24,24,126,126,0,0
PQ 1005 DATA 24,24,30,30,0,0
KA 1006 DATA 6,12,24,48,96,0
ES 1007 DATA 96,48,24,12,6,0
CI 1008 DATA 2,6,14,30,62,0
CH 1009 DATA 0,0,6,6,6,0
ZP 1010 DATA 62,30,14,6,2,0
RS 1011 DATA 0,0,96,96,96,0
KA 1012 DATA 96,96,96,0,0,0
ZD 1013 DATA 96,96,96,96,96,0
HE 1014 DATA 6,6,6,6,6,0
ZA 1015 DATA 6,6,6,0,0,0
ZP 1016 DATA 24,26,118,26,24,0
TL 1017 DATA 0,30,30,24,24,0
WC 1018 DATA 24,24,24,24,24,0
WL 1019 DATA 24,24,126,24,24,0
UN 1020 DATA 24,60,60,60,24,0
RW 1021 DATA 14,14,14,14,14,0
ON 1022 DATA 126,126,0,0,0,0
TI 1023 DATA 24,24,30,24,24,0
RK 1024 DATA 24,24,120,24,24,0
PA 1025 DATA 126,126,126,0,0,0
LB 1026 DATA 120,120,24,24,0,0
IX 1027 DATA 124,84,87,5,5,0
PE 1096 DATA 8,28,62,28,8,0
LJ 1123 DATA 8,26,62,26,8,0
IG 1128 DATA 103,67,97,67,103,0
JG 1129 DATA 126,0,0,102,102,0
OL 1130 DATA 126,126,126,0,0,0
TB 1131 DATA 102,102,6,6,126,0
JZ 1132 DATA 102,102,0,0,126,0
JK 1133 DATA 102,102,96,96,126,0
WS 1134 DATA 120,114,102,78,30,0
TQ 1135 DATA 30,78,102,114,120,0
EW 1136 DATA 124,120,112,96,64,0
ZN 1137 DATA 126,126,120,120,120,0
ZH 1138 DATA 64,96,112,120,124,0
QA 1139 DATA 126,126,30,30,30,0
TD 1140 DATA 30,30,30,126,126,0
KW 1141 DATA 30,30,30,30,30,0
RY 1142 DATA 120,120,120,120,120,0
EO 1143 DATA 120,120,120,126,126,0
OS 1144 DATA 103,101,9,101,103,0
CZ 1145 DATA 126,96,96,102,102,0
SY 1146 DATA 102,102,102,102,102,0
IP 1147 DATA 102,102,0,102,102,0
CS 1148 DATA 102,66,66,66,102,0
XG 1149 DATA 112,112,112,112,112,0
UR 1150 DATA 0,0,126,126,126,0
WD 1151 DATA 102,102,96,102,102,0
MI 1152 DATA 102,102,6,102,102,0
VC 1153 DATA 0,0,0,126,126,0
QF 1154 DATA 126,6,6,102,102,0
GK 1156 DATA 119,111,65,111,119,0
LF 1157 DATA 119,123,65,123,119,0
UI 1158 DATA 119,99,85,119,119,0
WZ 1159 DATA 119,119,85,99,119,0
UD 1160 DATA 127,127,127,127,127,0
SD 1161 DATA 127,127,69,127,127,0
TF 1162 DATA 127,79,127,79,127,0
HO 1163 DATA 107,65,107,65,107,0
XH 1164 DATA 111,69,20,81,123,0
PL 1165 DATA 127,91,119,109,127,0
GP 1166 DATA 127,83,45,81,117,0
UM 1167 DATA 127,119,79,127,127,0
NJ 1168 DATA 127,99,93,62,127,0
PV 1169 DATA 127,62,93,99,127,0
TN 1170 DATA 85,65,99,65,85,0
QV 1171 DATA 127,119,65,119,127,0
QW 1172 DATA 127,125,115,127,127,0
XG 1173 DATA 127,119,119,119,127,0
MC 1174 DATA 127,121,121,127,127,0
KF 1175 DATA 125,123,119,111,95,0
UW 1176 DATA 126,67,85,97,95,0
OI 1177 DATA 127,109,65,125,127,0
PY 1178 DATA 111,93,89,69,127,0
OC 1179 DATA 123,93,85,73,95,0
HT 1180 DATA 127,115,107,65,123,0
JR 1181 DATA 123,77,85,81,127,0
KA 1182 DATA 127,65,85,81,127,0
HQ 1183 DATA 127,93,91,71,127,0
MC 1184 DATA 127,65,85,65,127,0
OS 1185 DATA 127,69,85,65,127,0
PG 1186 DATA 127,127,73,127,127,0
OV 1187 DATA 127,125,83,127,127,0
KY 1188 DATA 127,119,107,93,62,0
RD 1189 DATA 127,107,107,107,127,0
JH 1190 DATA 62,93,107,119,127,0
NK 1191 DATA 127,95,52,79,127,0
TN 1192 DATA 99,93,69,69,127,0
QX 1193 DATA 127,97,91,97,127,0
LX 1194 DATA 127,65,85,85,107,0
KK 1195 DATA 127,65,93,93,107,0
MJ 1196 DATA 127,65,93,107,119,0
OH 1197 DATA 127,65,85,85,127,0
RP 1198 DATA 127,65,87,87,127,0
PB 1199 DATA 127,99,93,85,115,0
LR 1200 DATA 127,65,119,65,127,0
KQ 1201 DATA 127,93,65,93,127,0
KI 1202 DATA 127,121,93,65,95,0
LR 1203 DATA 127,65,119,107,93,0
LD 1204 DATA 127,65,125,125,127,0
BT 1205 DATA 65,111,119,111,65,0
EQ 1206 DATA 65,111,119,123,65,0
KY 1207 DATA 127,65,93,65,127,0
JR 1208 DATA 127,65,87,87,111,0
JK 1209 DATA 127,65,93,64,126,0
MF 1210 DATA 127,65,87,83,109,0
RS 1211 DATA 127,77,85,89,127,0
NV 1212 DATA 127,95,65,95,127,0
JX 1213 DATA 127,65,125,65,127,0
CE 1214 DATA 95,103,121,103,95,0
GK 1215 DATA 65,125,115,125,65,0
LB 1216 DATA 93,107,119,107,93,0
PR 1217 DATA 127,79,113,79,127,0
SC 1218 DATA 127,89,85,77,127,0
MC 1219 DATA 127,65,93,93,127,0
FS 1220 DATA 95,111,119,123,125,0
KT 1221 DATA 127,93,93,65,127,0
HS 1222 DATA 119,111,95,111,119,0
MD 1223 DATA 125,125,125,125,125,0
VR 1224 DATA 119,99,65,99,119,0
OX 1225 DATA 123,85,85,97,127,0
JD 1226 DATA 127,65,117,117,123,0
TB 1227 DATA 127,115,109,109,127,0
MT 1228 DATA 123,117,117,65,127,0
KR 1229 DATA 127,99,85,101,127,0
RU 1230 DATA 127,119,65,87,95,0
KC 1231 DATA 118,106,106,112,127,0
KU 1232 DATA 127,65,119,113,127,0
LA 1233 DATA 127,117,81,125,127,0
IE 1234 DATA 127,121,125,81,127,0
LB 1235 DATA 127,65,123,117,127,0
LS 1236 DATA 127,95,65,125,127,0
JR 1237 DATA 97,111,119,111,97,0
NY 1238 DATA 127,113,119,113,127,0
MM 1239 DATA 127,113,117,113,127,0
OP 1240 DATA 127,96,107,107,119,0
QO 1241 DATA 119,107,107,96,127,0
OB 1242 DATA 127,113,119,123,127,0
KL 1243 DATA 127,109,101,105,109,0
HH 1244 DATA 111,67,109,121,127,0
LD 1245 DATA 127,113,125,113,127,0
ON 1246 DATA 119,123,125,123,119,0
NN 1247 DATA 97,125,123,125,97,0
QL 1248 DATA 127,117,123,117,127,0
SF 1249 DATA 127,119,121,119,127,0
LI 1250 DATA 109,105,101,109,127,0
EF 1251 DATA 119,101,65,101,119,0
DG 1252 DATA 127,127,0,127,127,0
NJ 1253 DATA 127,67,79,81,127,0
SK 1254 DATA 127,119,99,65,127,0
RT 1255 DATA 127,65,99,119,127,0
```

□

1029

SCREEN DUMP

the one you've waited for!

Many owners of the 1029 printer will have been disappointed by the lack of available screen dump programs. Although the manual gives some indication of how to use the bit-image graphics of the printer it is not easy, for beginners particularly, to make a great deal of sense from the limited detail given, so here, for all to use, is a 1029 screen dump utility.

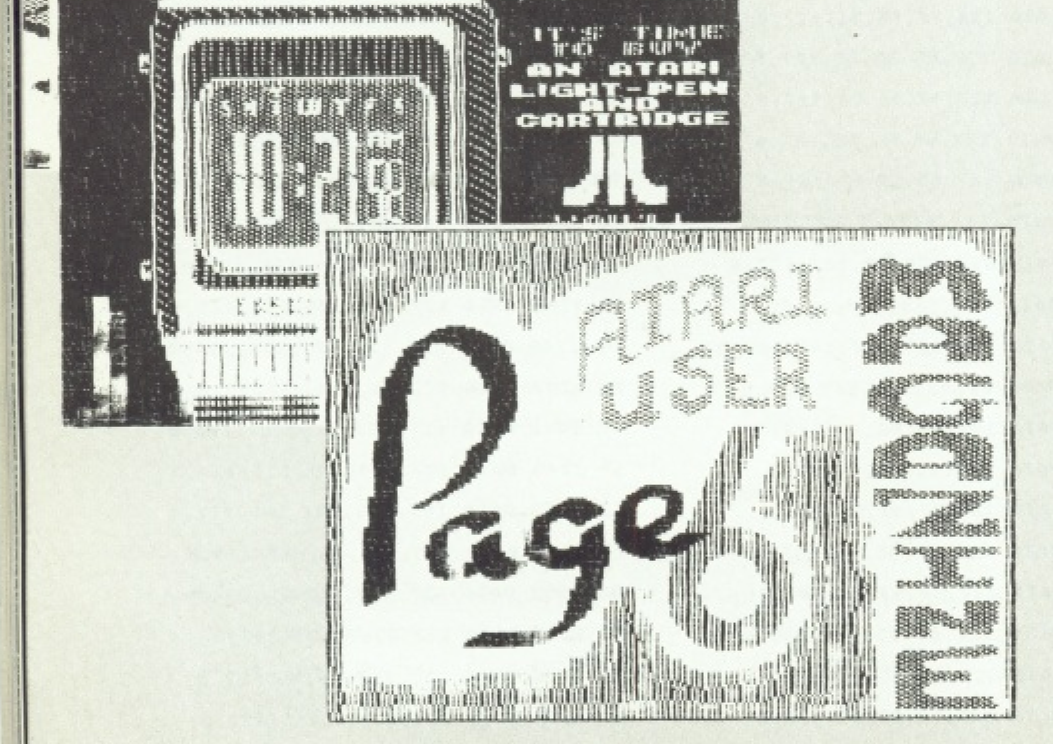
The program is fairly well REMarked and screen prompted for ease of use and entry and has been error trapped and, more or less, fully debugged. The program as it stands requires BASIC and a disk drive but with a few minor alterations could equally well run from cassette. It allows loading of various screen save formats including Atari Artist, Magniprint, Graphics 7/8/15 and will print in four different sizes.

One drawback at present is that the pictures are printed sideways but that should not cause too many problems. The dump is quite fast for a printer of this type and will dump a screen roughly 112mm × 80mm in about 58 seconds. I hope to remedy the sideways printing and, if there is sufficient interest, hope to add extra features such as bit pattern setting, colour dumps and borders etc. I hope that you find the program useful as it is, but let me know (via PAGE 6) if you would like any improvements.

by

John Morgan






```
EI 1 REM ********************************
IO 2 REM *         SCREEN DUMP          *
GP 3 REM *   for Atari 1029 Printer     *
LS 4 REM *             by               *
MQ 5 REM *        John Morgan           *
ED 6 REM * ---------------------------- *
JA 7 REM *  PAGE 6 MAGAZINE - ENGLAND   *
EP 8 REM ********************************
NO 9 REM
YY 15 REM USR 1696 MOVES 40 BYTES TO BUFF
   $
VF 16 REM DH$ DOUBLES SIZE OF BUFF$ IN PA
   IRS OF BYTES
ME 17 REM DW$ LOADS BUFF$ WITH 4 LSBits
DZ 18 REM DW$+39 LOADS BUFF$ WITH 4 MSBit
   s
JV 20 GRAPHICS 18:POKE 87,0:POKE 82,1:? :
   ? "1029 GRAPHICS DUMP":? :? "   initia
   lizing":? :? " please  WAIT...."
KD 100 GOSUB 10000:REM INIT
ZN 110 GOSUB 21000:REM TITLE
IX 120 GOSUB 8100:REM INPUT FILENAME
HS 130 GOSUB 8000:REM DISK FILE FORMAT
LO 140 GOSUB 8200:REM PRINT SIZE+OPEN P:
VT 150 GOSUB 1000*GMODE:REM LOAD SCREEN
YF 160 SCRMEM=PEEK(88)+256*PEEK(89):SCRME
   M=SCRMEM+40*191:REM FIND SCREEN ADR.
FE 170 CON=PEEK(53279):IF CON=3 THEN 110
XR 180 IF CON<>6 THEN 170
YT 190 GOSUB SIZE*100:REM DUMP IT
LM 200 TRAP 40000:GOTO 110
NT 210 END
NI 390 REM DUMP  ROUTINES
YL 400 REM NORM.WID.NOR.HEIGHT
UA 410 MSB=0:LSB=192
KF 420 FOR PLINE=SCRMEM TO SCRMEM+39
RR 430 P=USR(1696,PLINE,ADR(BUFF$))
UP 440 ? #5;C$;CHR$(MSB);CHR$(LSB);BUFF$(
   1,192)
GG 450 NEXT PLINE:RETURN
JZ 500 REM NORM.WID.DUB.HEIT.
UA 510 MSB=1:LSB=128
KG 520 FOR PLINE=SCRMEM TO SCRMEM+39
RS 530 P=USR(1696,PLINE,ADR(BUFF$))
JV 540 P=USR(ADR(DH$),ADR(BUFF$),ADR(PRNT
   $))
LQ 550 ? #5;C$;CHR$(MSB);CHR$(LSB);PRNT$
GJ 560 NEXT PLINE:RETURN
YX 600 REM DUB.WID.NOR.HEIT.
UC 610 MSB=0:LSB=192
KH 620 FOR PLINE=SCRMEM TO SCRMEM+39
```

```
CK 1440 DATA 204,169,78,160,3,145,203
VN 1450 DATA 160,99,145,203,169,14,160
KW 1460 DATA 6,145,203,200,192,99,208
PL 1470 DATA 249,160,102,145,203,200,192
DY 1480 DATA 199,208,249,162,16,169,12
PE 1490 DATA 157,66,3,32,86,228,162
XN 1500 DATA 16,169,3,157,66,3,104
CG 1510 DATA 104,157,69,3,104,157,68
LP 1520 DATA 3,169,4,157,74,3,32
FM 1530 DATA 86,228,162,6,32,0,6
GD 1540 DATA 202,16,250,32,0,6,141
VO 1550 DATA 151,6,162,4,32,0,6
BT 1560 DATA 202,16,250,162,0,32,0
WG 1570 DATA 6,157,196,2,232,224,5
JS 1580 DATA 208,245,162,8,32,0,6
RJ 1590 DATA 202,16,250,165,88,133,203
DD 1600 DATA 165,89,133,204,169,0,133
WD 1610 DATA 207,133,208,173,83,3,201
VM 1620 DATA 1,240,1,96,32,0,6
LY 1630 DATA 201,0,240,18,201,129,48
DO 1640 DATA 42,41,127,170,32,0,6
KV 1650 DATA 32,31,6,202,208,247,240
RD 1660 DATA 223,32,0,6,133,206,230
JQ 1670 DATA 206,32,0,6,133,205,32
KN 1680 DATA 0,6,32,31,6,198,205
TU 1690 DATA 208,249,198,206,240,197,208
AB 1700 DATA 243,170,32,0,6,32,31
TM 1710 DATA 6,202,208,250,240,183
TC 2000 REM MAGNI-PRINT LOADER
QE 2010 CLOSE #1:OPEN #1,4,0,FILE$
RO 2020 GET #1,G:GRAPHICS G:FOR I=704 TO 712:GET #1,G:POKE I,G:NEXT I
SE 2030 RAMTOP=PEEK(106)*256
BD 2040 DLIST=PEEK(560)+256*PEEK(561)
IE 2050 ADDRESS=DLIST
VA 2060 NUMBER=RAMTOP-DLIST+1
QD 2070 IO=16
VH 2080 IOCB=832+IO:POKE IOCB+2,7
LE 2090 ADRHI=INT(ADDRESS/256)
VU 2100 ADRLO=ADDRESS-ADRHI*256
DV 2110 POKE IOCB+4,ADRLO:POKE IOCB+5,ADRHI
BR 2120 NUMHI=INT(NUMBER/256)
VG 2130 NUMLO=NUMBER-256*NUMHI
MI 2140 POKE IOCB+8,NUMLO:POKE IOCB+9,NUMHI
SE 2150 I=USR(ADR("hhh■LV■"),IO)
DW 2160 CLOSE #1:RETURN
DR 3000 REM GRAPHICS 7 LOADER
AR 3010 GRAPHICS 23:OPEN #1,4,0,FILE$
DJ 3020 POKE 856,0:POKE 857,15:GOTO 5040
MJ 4000 REM GRAPHICS 8
BI 4010 GRAPHICS 24:OPEN #1,4,0,FILE$
PP 4020 GOTO 5020
QN 5000 REM GRAPHICS 15
AC 5010 GRAPHICS 31:OPEN #1,4,0,FILE$
JF 5020 POKE 856,0:POKE 857,30
NN 5030 REM SET UP REST OF IOCB 1
OO 5040 POKE 850,7:POKE 858,4
SO 5050 POKE 849,1
NG 5060 POKE 852,PEEK(88)
OR 5070 POKE 853,PEEK(89)
AE 5080 P=USR(ADR("h■■LV■"))
EG 5090 CLOSE #1:RETURN
NQ 8000 GOSUB CLEAR:REM INPUT FILE FORMAT
JU 8010 ? "  DISK FILE FORMAT MENU.":? " ──── ──── ───── ────":?
OP 8020 ? "  1 ATARI ARTIST ";
AR 8030 ? "  2 MAGNI-PRINT":?
```

```
RT 630 P=USR(1696,PLINE,ADR(BUFF$))
MG 640 P=USR(ADR(DW$)+39,ADR(BUFF$),ADR(PRNT$))
LR 650 ? #5;C$;CHR$(MSB);CHR$(LSB);PRNT$
TG 660 P=USR(ADR(DW$),ADR(BUFF$),ADR(PRNT$))
LV 670 ? #5;C$;CHR$(MSB);CHR$(LSB);PRNT$
GO 680 NEXT PLINE:RETURN
KW 700 REM DUB.WID.DUB.HEIT.
UC 710 MSB=1:LSB=128
KI 720 FOR PLINE=SCRMEM TO SCRMEM+39
RU 730 P=USR(1696,PLINE,ADR(BUFF$))
QU 740 P=USR(ADR(DW$)+39,ADR(BUFF$),ADR(TEMP$))
CP 750 P=USR(ADR(DH$),ADR(TEMP$),ADR(PRNT$))
LU 760 ? #5;C$;CHR$(MSB);CHR$(LSB);PRNT$
ZM 770 P=USR(ADR(DW$),ADR(BUFF$),ADR(TEMP$))
CV 780 P=USR(ADR(DH$),ADR(TEMP$),ADR(PRNT$))
MA 790 ? #5;C$;CHR$(MSB);CHR$(LSB);PRNT$
GA 800 NEXT PLINE:RETURN
PU 1000 REM  PICLOADA
NF 1010 REM  TOUCH TABLET
WM 1020 REM  PICTURE LOADING UTILITY
AL 1030 REM  BY  PAUL LAY
WL 1040 REM  FROM PAGE 6 MAGAZINE #20
CF 1050 IF PEEK(1536)=142 AND LEN(CODE$)=244 THEN 1120
ZS 1060 GRAPHICS 18:POSITION 2,4:? #6;"INITIALISING        PICLOADA........"
KO 1070 RESTORE 1140
LM 1080 FOR I=1536 TO 1693:READ J
DG 1090 POKE 712,J:POKE I,J:NEXT I
AO 1100 FOR I=1 TO 244:READ J:POKE 712,J
FF 1110 CODE$(I)=CHR$(J):NEXT I
JK 1120 AA=USR(ADR(CODE$),ADR(FILE$))
AK 1130 RETURN
LZ 1140 DATA 142,153,6,140,154,6,162
NL 1150 DATA 16,169,7,157,66,3,169
KX 1160 DATA 0,157,72,3,157,73,3
AC 1170 DATA 32,86,228,172,154,6,174
EF 1180 DATA 153,6,96,141,152,6,142
KT 1190 DATA 153,6,140,154,6,160,0
KN 1200 DATA 145,203,174,151,6,202,208
SO 1210 DATA 8,238,208,0,238,208,0
PD 1220 DATA 208,3,238,207,0,173,208
TQ 1230 DATA 0,201,192,208,5,169,1
NA 1240 DATA 141,208,0,201,193,208,8
NL 1250 DATA 169,0,141,208,0,238,207
QV 1260 DATA 0,173,207,0,201,40,208
TN 1270 DATA 8,169,0,141,207,0,238
GS 1280 DATA 208,0,165,88,133,203,165
VJ 1290 DATA 89,133,204,162,39,165,203
VM 1300 DATA 24,109,208,0,133,203,165
JJ 1310 DATA 204,105,0,133,204,202,16
VL 1320 DATA 239,165,203,24,109,207,0
AB 1330 DATA 133,203,165,204,105,0,133
SM 1340 DATA 204,172,154,6,174,153,6
UO 1350 DATA 173,152,6,96,0,0,0
RZ 1360 DATA 0,83,58,155
OG 1370 DATA 162,96,169,12,157,66,3
VK 1380 DATA 32,86,228,162,96,169,3
NM 1390 DATA 157,66,3,169,155,157,68
GK 1400 DATA 3,169,6,157,69,3,169
JP 1410 DATA 12,157,74,3,169,8,157
JP 1420 DATA 75,3,32,86,228,173,48
ZS 1430 DATA 2,133,203,173,49,2,133
```

```
AW 8040 ? "  3 GRAPHICS  7  ";
WW 8050 ? "  4 GRAPHICS  8":?
UC 8060 ? "  5 GRAPHICS  15":?
HR 8070 ? "  PLEASE ENTER PICTURE FORMAT:";
SR 8080 GET #3,GMODE:GMODE=GMODE-48:IF GMODE<1 OR GMODE>5 THEN 8080
BH 8090 RETURN
QL 8100 GOSUB CLEAR:REM ENTER FILENAME
DO 8110 ? " PRESS RETURN FOR DIRECTORY OF DISK":? :? "        OR"
BS 8120 ? :? "        ENTER : FILENAME.EXT OF THE    FILE TO LOAD : *.*<<<<";
QK 8130 INPUT T$:FILE$="D:":FILE$(LEN(FILE$)+1)=T$:GOTO 8170
YP 8140 GRAPHICS 0:GOSUB 21000:? :? :? " FILENAME:- ";FILE$;" Error: ";PEEK(195)
OY 8150 ? :? "    PRESS RETURN TO TRY AGAIN":? :? " OR ESCAPE TO RE-ENTER FILENAME";
GI 8160 GET #3,KEY:IF KEY=27 THEN 8100
DW 8170 GOSUB CLEAR:? "INSERT CORRECT DISK & PRESS RETURN";:GET #3,KEY
WN 8180 IF FILE$="D:*.*" THEN GOSUB 8400:GOTO 8100
XM 8190 TRAP 8140:CLOSE #1:OPEN #1,4,0,FILE$:CLOSE #1:TRAP 40000:RETURN
VW 8200 GOSUB CLEAR:REM PRINT FORMAT
ZA 8210 ? " PRINT SIZE MENU.":? " ──── ─ ──── ────"
ML 8220 ? :? " 1 NORMAL WIDTH NORMAL HEIGHT"
XH 8230 ? :? " 2 NORMAL WIDTH DOUBLE HEIGHT"
EX 8240 ? :? " 3 DOUBLE WIDTH NORMAL HEIGHT"
PT 8250 ? :? " 4 DOUBLE WIDTH DOUBLE HEIGHT"
CD 8260 ? :? "  PLEASE ENTER PICTURE SIZE :";
CL 8270 GET #3,SIZE:SIZE=SIZE-45:IF SIZE<4 OR SIZE>7 THEN 8270
NP 8280 GOSUB CLEAR
VB 8290 ? "        ENSURE THAT PRINTER IS ON":? :? "        AND IS LOADED WITH PAPER":? :? :?
UZ 8300 ? "        WHEN PICTURE HAS LOADED":? :? "      PRESS START TO PRINT":? :? "    OR   OPTION TO RE-RUN PROGRAM"
BW 8310 ? :? :? :? "   PRESS RETURN TO LOAD PICTURE";:GET #3,KEY
AN 8320 TRAP 8350:CLOSE #5:OPEN #5,8,0,"P:":? #5;CHR$(27);CHR$(57):REM 9 LINES PER INCH
OR 8330 TRAP 40000
AY 8340 RETURN
SL 8350 GOSUB 21000:? :? :? "      PRINTER IS NOT REPONDING"
KJ 8360 ? :? "   CHECK ALL CONECTIONS & LEADS"
VD 8370 ? :? "   THEN PRESS RETURN TO RE-TRY";
TI 8380 GET #3,KEY
TL 8390 GOTO 8320
BE 8400 REM GET DIRECTORY
WK 8410 CLOSE #4:OPEN #4,6,0,FILE$
WU 8420 GRAPHICS 0:? :? "DIRECTORY DRIVE ONE:":POSITION 2,3:PASS=0
```

SCREEN DUMP continued

```
FZ 8430 FOR I=1 TO 16:TRAP 8480
LS 8440 INPUT #4,FILE$:? FILE$
ST 8450 NEXT I:IF  NOT PASS THEN PASS=1:P
   OKE 82,21:POSITION 21,3:GOTO 8430
TO 8460 POKE 82,2:? :? "↓ PRESS >>ANY KE
   Y<< FOR MORE FILES ";:GET #3,KEY
TT 8470 GOTO 8420
OI 8480 CLOSE #4:POKE 82,2:POSITION 12,20
   :? "NO MORE ENTRIES":? :? "      PRESS
   RETURN TO CONTINUE";:GET #3,KEY
GU 8490 FILE$="":TRAP 40000:GOSUB 21000:R
   ETURN
KN 10000 POKE 82,2:REM INIT STRINGS
TU 10010 OPEN #3,4,0,"K:":CLEAR=20000
EL 10020 DIM FILE$(17),T$(12),M$(61),DH$(
   66),DW$(82),CODE$(244),BUFF$(385),TEMP
   $(385),PRNT$(385),C$(2),E$(20)
DB 10030 BUFF$=CHR$(0):BUFF$(385)=BUFF$:B
   UFF$(2)=BUFF$
UU 10040 TEMP$=BUFF$:PRNT$=BUFF$
IE 10050 C$=CHR$(27):C$(2)=CHR$(65)
HF 10060 E$=CHR$(156):E$(20)=E$:E$(2)=E$
CG 10070 REM MASK TABLE & MACHINE CODE
ND 10080 RESTORE 10090:FOR P=1 TO 16:READ
    BIT:POKE 1759+P,BIT:POKE 712,BIT:NEXT
    P
PJ 10090 DATA 0,3,12,15,48,51,60,63,192,1
   95,204,207,240,243,252,255
JE 10100 RESTORE 10110:FOR P=1 TO 61:READ
    BYTE:POKE 1695+P,BYTE:POKE 712,BYTE:N
   EXT P
ZS 10110 DATA 104,104,141,181,6,104,141,1
   80
XA 10120 DATA 6,104,141,187,6,104,141,186
RP 10130 DATA 6,160,193,173,40,129,136,24
   0
AQ 10140 DATA 35,141,235,52,238,186,6,240
TG 10150 DATA 71,173,180,6,56,233,40,141
PO 10160 DATA 180,6,144,4,24,76,179,6
DC 10170 DATA 206,181,6,76,179,6,238,187
CX 10180 DATA 6,76,193,6,96
VJ 10200 RESTORE 10210:FOR P=1 TO 66:READ
    BYTE:DH$(P,P)=CHR$(BYTE):POKE 712,BYT
   E:NEXT P
OZ 10210 DATA 104,104,133,204,104,133,203
   ,104
DW 10220 DATA 133,206,104,133,205,169,0,1
   33
QL 10230 DATA 207,133,0,164,207,177,203,1
   64
OM 10240 DATA 0,145,205,200,145,205,200,1
   32
KW 10250 DATA 0,230,207,165,207,201,128,2
   08
VO 10260 DATA 234,230,206,164,207,177,203
   ,164
QY 10270 DATA 0,145,205,200,145,205,200,1
   32
ML 10280 DATA 0,230,207,165,207,201,192,2
   08
DA 10290 DATA 234,96
XX 10300 RESTORE 10310:FOR P=1 TO 82:READ
    BYTE:DW$(P,P)=CHR$(BYTE):POKE 712,BYT
   E:NEXT P:RETURN
PC 10310 DATA 104,104,133,204,104,133,203
   ,104
EJ 10320 DATA 133,206,104,133,205,160,0,1
   77
CV 10330 DATA 203,41,15,133,207,162,16,20
   2
BP 10340 DATA 228,207,208,251,189,224,6,1
   45
TM 10350 DATA 205,200,192,192,208,233,96,
   104
SF 10360 DATA 104,133,204,104,133,203,104
   ,133
BW 10370 DATA 206,104,133,205,160,0,177,2
   03
CW 10380 DATA 41,240,106,106,106,106,133,
   207
DG 10390 DATA 162,16,202,228,207,208,251,
   189
PP 10400 DATA 224,6,145,205,200,192,192,2
   08
EF 10410 DATA 229,96
DC 20000 REM CLR SCREEN
BY 20010 POSITION 2,5:? E$:RETURN
TT 21000 GRAPHICS 0:POSITION 2,1:? " ┌──
   ──────────────────────────────┐":REM "SP
   ACE CTRL Q CTRL R*32 CTRL E"
HI 21010 ? " |1029 GRAFIX DUMP REV 1.1 BY
    WJM|"
ED 21020 ? " └────────────────────────────
   ────┘":REM "SPACE CTRL Z CTRL R*32 CTR
   L C"
DM 21030 RETURN
```

1029

SMALL FONT

by Terry Davies

The Atari 1029 is a fine little printer, but its a pity that there's no provision for small printing which is really essential for producing labels of a reasonable size with a disk directory. Well! Fear not Atari 1029 owners, with the 1029 Small Font subroutine you too can print tiny – well, at least smaller! – like the more expensive printers.

Its done by switching on the printer's bit image capability, (graphics!). This program – which contains the 1029 Small Font subroutine – is a disk directory reader and label printer. It reads the directory and puts the information in a string and, depending on the letter or number in the string that is being printed, the computer reads the correct data to produce the right tiny letter.

The character font – which is what the data to produce the small letters is called – forms all the letters and numbers in only three columns each, with a blank column to produce a space between the letters. The way the 1029 printer normally reads a character is shown in Figure 1. A matrix of 5 columns and 7 rows is used with the data as the decimal equivalent of the binary number reading up the column. Just add up the numbers where the 1 occurs. Referring to Figure 1, column 1 would be $1+2+4+8+16+32=63$ and column 2 would be $8+64=72$.

The tiny font has a matrix of 3 rows and 5 columns as shown in Figure 2. Here column 1 is $1+2+4+8=15$ and column 2 is $2+8+16=26$.

The DATA lines in the routine relate to the ATASCII value of each character plus 700. For example, the ATASCII code for A is 65 so the DATA starting at line 765 in the 1029 Small Font subroutine is as follows:

```
765 DATA 65,15,26,15,0
```

The first DATA statement, 65, is the ASCII code for the letter A and is just a check number then three numbers 15,26,15 are the data for the letter A and finally a zero produces a space between the letters. The program reads a letter in the string to be printed and then sets the pointer to read the data (RESTORE) to line 700+decimal ASCII code.

THE LABEL PRINTER

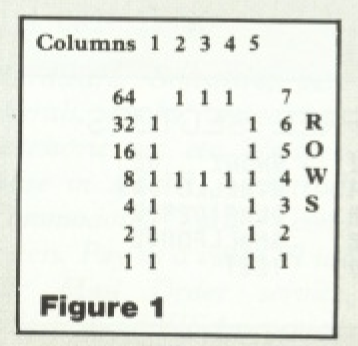
The label printer is designed to print on 60 × 32mm (2 3/8ins. × 1 1/4ins.) labels, produced by Fisher Clark serial number SR603W, which are just right for disks. IF there are more than 16 entries on the disk then the words 'DOS files' don't appear so you can get the additional files on, and even though there may be more on the disk only a maximum of 20 files will appear on the label.

The program will work on DOS 3 also, but it's not interchangeable which means if it's on DOS 2 or 2.5 it won't read DOS 3 or vice-versa because the directories are in different places and in different format on the disk.

Well there you are. I hope this gives you an insight into the working of your Atari 1029 printer. You can use the Small Font subroutine with anything you like, just put the text in a string and GOSUB.

All REM statements can be safely omitted as no GOTO's or GOSUB's point directly to them.

```
EI 1 REM ******************************
WV 2 REM *          SMALL FONT         *
LH 3 REM *  A subroutine and demo for  *
OS 4 REM *      ATARI 1029 PRINTER     *
PF 5 REM *       by TERRY DAVIES       *
ED 6 REM * --------------------------- *
JA 7 REM *  PAGE 6 MAGAZINE - ENGLAND  *
EP 8 REM ******************************
NO 9 REM
TF 80 DIM A$(900),S$(20),F$(15),P$(15),N$
   (30),AN$(1),B$(50):POKE 82,4:POKE 764,
   255
VZ 90 GOSUB 610:POSITION 4,4:? "INSERT A
   DOS DISK AND PRESS RETURN";:INPUT AN$:
   REM RETURN WRITTEN IN INVERSE VIDEO
MO 100 GOSUB 610:TRAP 575:A$(1)=" ":A$(90
   0)=" ":A$(2)=A$:P$="":S$="":REC=0
QP 110 REM READ DIRECTORY
CL 120 CLOSE #1:OPEN #1,6,0,"D:*.*":N$="D
   OS FILES"
AR 130 INPUT #1,P$
UT 135 IF ASC(P$(3,3))<48 OR ASC(P$(3,3))
   >90 THEN POKE 195,5:CLOSE #1:GOTO 590
BX 140 IF P$(5,8)="FREE" THEN GOTO 190
QJ 160 REC=REC+1:LP=LEN(P$):M=13:F=12
XK 170 IF LP=0 THEN CLOSE #1:GOTO 200
BQ 180 A$(REC*M-F,REC*M-F+LP)=P$:GOTO 130
NQ 190 F$=P$:LP=0:GOTO 170
KZ 200 P=1:X=1:TEC=REC-32:IF TEC<=0 THEN
   230
ML 210 N=16:REC=30
LI 230 POSITION 6,3:? N$;"  ";F$;:IF M>1
   THEN ? ;"S "
FD 240 ? :FOR AT=X TO REC STEP 2:S$=""
WU 250 IF AT<=9 THEN S$=CHR$(32)
AL 260 TRAP 590:? S$;AT;")";:? A$(AT*M-F,
   AT*M);" ";:IF AT+1=10 THEN ? CHR$(30);
NQ 270 IF AT=REC THEN 290
FM 280 ? S$;AT+1;")";:? A$((AT+1)*M-F,(AT
   +1)*M):NEXT AT
IO 290 POSITION 2,21:? "(1) PRINT LABEL
   (2) READ ANOTHER DISK"
LR 300 IF TEC>0 THEN POSITION 13,22:? "3)
   NEXT PAGE"
QJ 310 POSITION 13,23:? "CHOOSE OPTION";
WN 320 POKE 764,255
OC 330 I=PEEK(764):IF I=31 THEN 400
LF 340 IF I=30 THEN GOTO 100
PW 350 IF I=26 AND FLAG=1 THEN FLAG=0:GOT
   O 200
```



Columns	1	2	3	4	5		
64		1	1	1		7	
32	1				1	6	R
16	1				1	5	O
8	1	1	1	1	1	4	W
4	1				1	3	S
2	1				1	2	
1	1				1	1	

Figure 1

Columns	1	2	3	4	5		
64						7	
32						6	R
16		1				5	O
8	1	1	1			4	W
4	1		1			3	S
2	1	1	1			2	
1	1		1			1	

Figure 2

```
QN 360 IF I=26 AND P=1 THEN ? CHR$(125):R
    EC=REC+TEC:X=33:N=INT(TEC/2)+32:P=2:FL
    AG=1:GOSUB 610:GOTO 230
PR 370 IF I=30 AND P=2 THEN P=1:GOTO 2290
EX 380 IF I=255 THEN 330
NQ 390 GOTO 320
MO 400 REM PRINT
UH 410 CLOSE #4:TRAP 560:OPEN #4,8,0,"P:"
    :TRAP 40000
SP 420 IF REC>20 THEN REC=20:REM PRINT-OU
    T LIMITED TO 10 LINES, CHANGE THIS IF
    YOU WISH!!
TY 425 ? #4;"DOS 2.5 ";P$;"S"
TQ 430 IF INT(REC/2)<REC/2 THEN N=INT(REC
    /2)+1:GOTO 440
VU 435 N=REC/2
SL 440 AT=1:FOR Q=1 TO N:FOR A=1 TO 2
FH 445 B$="":IF AT<10 THEN B$=" "
OL 450 B$(LEN(B$)+1)=STR$(AT):B$(LEN(B$)+
    1)=") ":B$(LEN(B$)+1)=A$(AT*M-F,AT*M)
AP 455 IF B$(6,6)="0" THEN POP :? #4:GOTO
    470
XC 456 GOSUB 490
GP 460 AT=AT+1:NEXT A
BZ 465 ? #4:NEXT Q
QC 470 GOTO 290
JQ 480 REM THIS IS THE 1029 SUBSCRIPT SUB
    ROUTINE FOR PRINTING SMALL LETTERS
FM 490 ? #4;CHR$(27);CHR$(57);:REM SETS P
    RINTER TO 9 LINES A INCH
EE 500 FOR C=1 TO LEN(B$):AS=ASC(B$(C,C))
QM 510 RESTORE 700+AS
NK 520 ? #4;CHR$(27);CHR$(65);CHR$(0);CHR
    $(4);:READ B:REM SETS GRAPHICS MODE AN
    D TELLS PRINTER TO EXPECT 4 NUMBERS
AW 530 FOR I=1 TO 4:READ R:? #4;CHR$(R);:
    NEXT I:? #4;:NEXT C:RETURN
SQ 540 GOTO 90
BD 550 REM ERROR TRAPS
LM 560 CLOSE #4:? CHR$(253);CHR$(125):POK
    E 752,1:POSITION 10,10:? "CHECK THE PR
    INTER":REM TEXT IN INVERSE VIDEO
AX 570 POSITION 6,12:? "I DON'T THINK ITS
     TURNED ON":GOSUB 640:GOSUB 610:GOTO 2
    30:REM TEXT IN INVERSE VIDEO
JF 575 IF PEEK(195)=144 OR PEEK(195)=141
    THEN POKE 195,138
WZ 580 IF PEEK(195)=139 OR PEEK(195)=138
    THEN GOSUB 610:POSITION 14,12:? CHR$(2
    53);"WHOOPS...!!!":GOSUB 640:RUN
FJ 590 IF PEEK(195)=5 THEN GOSUB 610:POSI
    TION 13,10:? "NOT A DOS DISK":GOSUB 64
    0:RUN :REM TEXT IN INVERSE
WK 600 ? "ERROR #";PEEK(195):LIST (PEEK(1
    86)+256*PEEK(187)):STOP :REM TO CATCH
    ANYMISTAKES
OT 610 GRAPHICS 0:POKE 82,4:POKE 752,1:PO
    KE 710,0:DL=PEEK(560)+256*PEEK(561)+4
AW 620 POKE DL-1,71:POKE DL+2,6:POKE 82,4
VY 630 ? "DOS-DIRECTORY     disk reader/pr
    inter      (for the Atari 1029)":RETUR
    N
ZT 640 TRAP 40000:FOR W=1 TO 500:NEXT W:R
    ETURN
FH 700 REM DATA FOR SMALL LETTERS FIRST N
    UMBER IS ATASCII CODE FOR LETTER, THEN
    3 CODES FOR SHAPE THEN ZERO FOR SPACE
UZ 732 DATA 32,0,0,0,0
MV 733 DATA 33,0,29,0,0
AP 734 DATA 34,24,0,24,0
LS 735 DATA 35,10,31,10,0
ZX 736 DATA 36,5,31,10,0
IZ 737 DATA 37,9,14,18,0
OA 738 DATA 38,11,21,11,0
MZ 739 DATA 39,0,24,0,0
ZD 740 DATA 40,14,17,0,0
AQ 741 DATA 41,0,17,14,0
WE 742 DATA 42,10,4,10,0
OK 743 DATA 43,4,14,4,0
YE 744 DATA 44,1,2,0,0
DZ 745 DATA 45,4,4,4,0
YE 746 DATA 46,0,1,0,0
GR 747 DATA 47,2,4,8,0
VS 748 DATA 48,14,17,14,0
ME 749 DATA 49,0,31,0,0
VG 750 DATA 50,27,21,29,0
QJ 751 DATA 51,27,21,31,0
NB 752 DATA 52,12,20,31,0
TI 753 DATA 53,29,21,23,0
QB 754 DATA 54,31,21,23,0
UD 755 DATA 55,16,16,31,0
QI 756 DATA 56,31,21,31,0
TM 757 DATA 57,28,20,31,0
KI 758 DATA 58,0,10,0,0
LJ 759 DATA 59,1,10,0,0
AX 760 DATA 60,4,10,17,0
JB 761 DATA 61,10,10,10,0
BC 762 DATA 62,17,10,4,0
GK 763 DATA 63,8,19,12,0
UU 764 DATA 64,15,19,12,0
WH 765 DATA 65,15,26,15,0
OO 766 DATA 66,31,21,10,0
TA 767 DATA 67,14,17,10,0
WA 768 DATA 68,31,17,14,0
RR 769 DATA 69,31,21,21,0
LW 770 DATA 70,31,20,20,0
SR 771 DATA 71,31,17,23,0
BF 772 DATA 72,31,4,31,0
VQ 773 DATA 73,17,31,17,0
VK 774 DATA 74,17,31,16,0
VL 775 DATA 75,31,12,19,0
MU 776 DATA 76,31,1,1,0
GJ 777 DATA 77,31,8,31,0
UZ 778 DATA 78,31,16,31,0
WE 779 DATA 79,31,17,31,0
SM 780 DATA 80,31,20,28,0
SI 781 DATA 81,30,19,30,0
SU 782 DATA 82,31,20,27,0
US 783 DATA 83,29,21,23,0
VI 784 DATA 84,16,31,16,0
BL 785 DATA 85,31,1,31,0
AS 786 DATA 86,30,1,30,0
SY 787 DATA 87,30,15,30,0
LI 788 DATA 88,27,4,27,0
YA 789 DATA 89,24,15,24,0
UP 790 DATA 90,19,21,25,0
XG 794 DATA 94,8,16,8,0
IX 797 DATA 97,2,5,7,0
WO 798 DATA 98,15,5,7,0
IR 799 DATA 99,2,5,5,0
BB 800 DATA 100,7,5,15,0
YL 801 DATA 101,6,11,5,0
JY 802 DATA 102,0,15,10,0
QO 803 DATA 103,15,9,11,0
DA 804 DATA 104,15,4,7,0
TW 805 DATA 105,0,11,0,0
UQ 806 DATA 106,0,1,10,0
PT 807 DATA 107,7,2,5,0
MW 808 DATA 108,0,7,1,0
QV 809 DATA 109,2,4,7,0
IR 810 DATA 110,3,2,3,0
RG 811 DATA 111,6,9,6,0
MR 812 DATA 112,15,10,4,0
ES 813 DATA 113,14,10,15,0
JH 814 DATA 114,0,3,2,0
XA 815 DATA 115,0,5,10,0
DJ 816 DATA 116,4,15,5,0
RA 817 DATA 117,7,1,7,0
LL 818 DATA 118,2,1,2,0
MA 819 DATA 119,2,1,2,0
LQ 820 DATA 120,5,2,5,0
LP 821 DATA 121,4,3,4,0
PW 822 DATA 122,5,7,5,0
```

□

```
DOS 2.5 258 FREE SECTORS
 1)  BERT     V2  2)  SHOGI   V2
 3)  MAKEFIG  V1  4)  OTHELLO BAS
 5)  LIST1029V2   6)  DUMP1029V2
 7)  BERT2    V2  8)  SMALLFONV2
 9)  B2C      V2 10)  TEST     1
```

```
DOS 2.5 035 FREE SECTORS
 1) * BOOK     SFI  2) * CASSET   SFI
 3) * COM      SFI  4) * DEMO     SFI
 5) * DISK     SFI  6) * EDIT     SFI
 7) * EDUCATE  SFI  8) * GAME     SFI
 9) * GAMEREV  SFI 10) * GRAPHICSSFI
11) * SKETCH   SFI 12) * HARDWARESFI
13) * HOMEMGT  SFI 14) * MUSIC    SFI
15) * OPSYS    SFI 16) * PRINTER  SFI
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SUPER 3D PLOTTER II

Reviewed by John S. Davison

I've always found computer manipulation and display of three dimensional images fascinating to watch. This £29.99 package from Demon Software brings the capability to any 8-bit Atari with 48K or more, a disk drive, and a joystick. Optionally, you can use a printer to produce hard copy of your 3D images.

BETTER PACKAGING NEEDED?

My first impression of the package wasn't favourable. The cheap plastic packaging and dot matrix printed 56 page instruction manual on gaudy green and yellow paper did little to convince me I was handling quality software. The bright green(!) double sided disk and poor quality keyboard reference card didn't help either. Demon Software have indicated however that they are improving the packaging and providing a fully typeset manual which I feel is essential for any software at this price.

DISPLAYING IMAGES

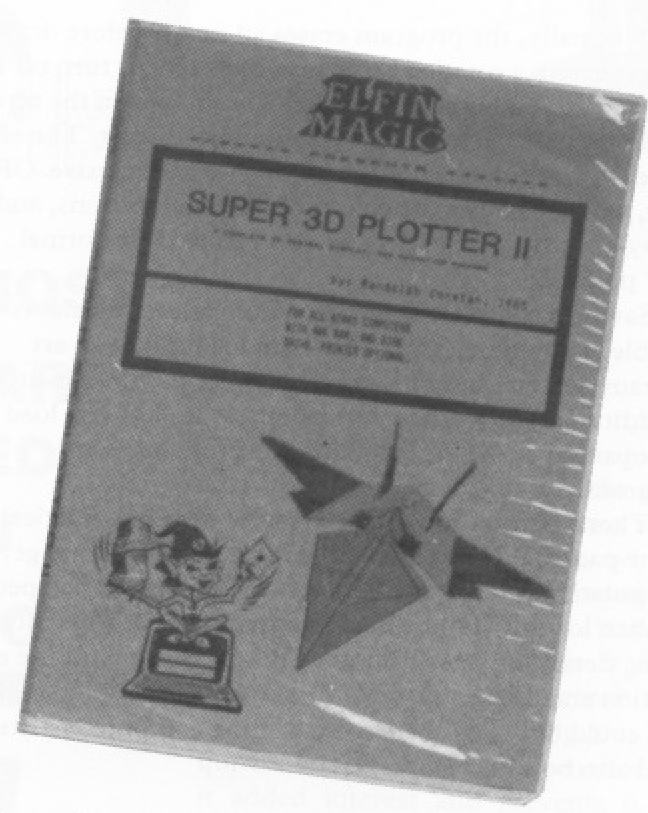
Booting up the disk produced a message saying that the program was on side 2! Side 1 contains data files – hmm....different, anyway! The program's driven by a combination of menu selection, keyboard function keys, and direct joystick input, depending on what you're doing. This sounds messy, but in practice worked surprisingly well. In fact, I found the user interface to be unexpectedly friendly.

The manual is written mainly in the form of a tutorial, and starts you off displaying and manipulating 3D images supplied with the package. Some of these are fairly simple, such as a cube, while others, like the aircraft and TIE fighter, are considerably more complex.

Choosing 'Load' from the main menu produced a listing of the image files held on the disk. Selection of one of them resulted in a screen display showing a 3D wire frame image of a futuristic looking aircraft, positioned as if flying out of the screen towards you.

Console keys let you switch between high, medium and low resolution displays, produce black on white, or white on black display in high and medium resolution, and cycle background colours in low resolution mode. My preference was to use a black image on white background in high resolution mode.

Using the keyboard, you can then rotate the image about its X, Y or Z axis. The aircraft image can thus be viewed from any angle. Rotation is 'animated', in that once begun it continues, moving the image around the chosen axis a few degrees at a time while you watch. Speed of rotation may be continually varied by keyboard control. Maximum speed is governed by complexity of the image and resolution of the display. At maximum speed in hi-res mode, the aircraft rotated completely about the chosen axis in about 25



seconds, at about 2 screen displays per second. Incidentally, there's no flicker as the image is redrawn.

You can instantly freeze the image in any position, or slow down, or reverse the rotation as required. Also, you can rotate the image about any one, two or all three axes simultaneously, making the image 'tumble' on the screen as if in zero gravity.

A clever feature of the program is that as it rotates the image, the correct perspective is maintained. So if we rotate the aircraft from its original position through 180 degrees so it appears to be flying away from us, the tail fins now appear much larger than the nose. This gives the eye important visual clues as to the orientation of the image. A wire frame graphic can be very difficult to recognise without this.

Two more pairs of keys control viewing distance and magnification. Both control the size of the image on the screen, the former giving a gradual 'zoom' in or out effect, while the latter enlarges or reduces the image by a factor of two at each key depression, and alters the perspective effect. By using both together you can produce a perspective to suit your preference.

SOLID IMAGES

The program has the ability to 'remove hidden surfaces' from the displayed image, giving it a more 'solid' appearance. In effect, it removes the lines at the back of the image you can't normally see. In a wire frame type image these are on view all the time, of course. The only snag is, there's a lot more processing involved, so the speed of rotation is reduced by about half.

After removing hidden surfaces you can have the resultant image colour filled. This, surprisingly, seems to make little difference to the speed of rotation, but gives the image an even more realistic appearance. In medium and hi-res modes, three shades of fill are available, namely black, white and an artifacted pattern. In low-res mode, the image is filled with green, dark blue and purple, while the background can be set at any colour you like. As with the packaging, this wouldn't have been my choice of colours, but does clearly delineate the different surfaces of the image.

continued overleaf

IMAGE TRAILS

Normally, the program erases an image before drawing the next one in a rotation sequence, but you can turn off the erase function. This results in a trail of images on the screen, leading to some fascinating 'computer art' effects. The effect can be further enhanced by switching into 'Exclusive-OR' mode, which changes the colour of line intersections, and also by offsetting the axes of rotation from their normal 'zero' position.

Saving a complete screen in Micropainter format is possible at any time. You could then load it into an art program, screen dump program, or other picture file utility for additional processing. A further feature lets you load a Micropainter format screen into this program as a background to your image.

These features give clues as to the possible practical uses for the package. How about drawing a simple 3D image, manipulating it to get the best viewing angle and perspective, and then loading it into an art program like Micropainter for adding detail and background work? Or turning off the erase function and doing the same thing with a trail of images? This could be a great help to struggling computer artists, and could also be a big time saver.

CREATING IMAGES

The tutorial continues by showing you how to create your own images, beginning with advice on how to prepare an image for input. For best results you really have to produce a paper and pencil drawing first, and work out the X, Y, and Z co-ordinates of the important points, and connecting lines between them. This can be hard work for a complex image!

Having defined your points and lines you can enter them in one of two ways. The 'fun' way is to use the Interactive Graphic Editor, which lets you draw the image on the screen using joystick (and occasional keyboard) input.

The tutorial steps you through the drawing of a cube with a hole cut through its centre. At first sight, even this simple example looks daunting, but in practice, using the Interactive Graphic Editor, it really is quite easy – I managed to produce a correct 3D image at the first attempt.

The interactive editor uses a 'rubber banding' technique for line drawing, like that used in most art programs. It's this feature plus the fact that the program tells you when you've connected with an existing point which makes accurate drawing possible. For real accuracy, though, there's another way of creating images, and that's by using the Data Editor. This isn't nearly so much fun as the interactive editor, as you key in all co-ordinates and point connections into tables. It's difficult to visualise the image as you're doing this, making it essential to do the paper and pencil drawing first. Either editor can be used for changing existing images, to correct mistakes, for example.

Following basic image construction techniques, the tutorial goes on to tackle more advanced features of the program, such as creating surfaces rather than lines, so you can use the hidden surface removal facility, merging of multiple images, and use of screen overlay facility. The manual also includes details on the technical aspects of the program, such as the mathematics used in calculating the 3D image rotation points, and how it was programmed.

PRINTING THE IMAGES

Two image printing facilities are provided, both intended for use with Epson compatible printers. The first of these is designed to work only with hi-res wire frame images, and produces an A4 size printout. The other works in medium or hi-res, with hidden surface removal and/or colour fill if required, and produces a printout filling one quarter of an A4 page. Both produce hard copy of good quality.

A BASIC program included in the package enables you to modify the print function to suit your printer. I didn't use this, as my Star SG10 is Epson compatible, and worked happily without changes being necessary. However, the BASIC program looked quite straightforward to use, assuming you know the control codes your printer needs to switch it into graphics mode.

CONCLUSIONS

After being put off initially by the packaging, I grew to like this program. I was impressed by its ease of use, thanks to its good user interface and clearly written manual (despite the awful colours, spelling mistakes, and dot matrix text). I was also impressed by its reliability and performance. No doubt the 16-bit ST could make it look silly, but considering the limitations of the 8-bit architecture, I think the author has done an excellent job.

For £29.99 I certainly expect better packaging and presentation, especially as far as the instruction manual is concerned. Indeed, the program deserves far better. This aside, Super 3D Plotter II should give you hours of pleasure and enjoyment if you're interested in exploring the world of three dimensional graphics. With the promised repackaging and improved manual my only major criticism will be removed and I can certainly give the program my full recommendation. ●

SHORT REVIEWS



A WHOLE HOST OF SOFTWARE REVIEWED FOR YOU

BY JIM SHORT

RAID OVER MOSCOW

Access Software/U.S. Gold
48k Disk £14.99
48k Cassette £9.99
1 Player
Joystick

This one arrived for review in perfect time to coincide with the Nuclear Arms summit in Iceland. Perhaps there's a moral in that somewhere? Anyway, the title of this game (rather than the content of the game itself) caused quite a stir when released on the Crummydore, so much so that it was subsequently shortened to plain old 'Raid'. Presumably, this was done so as not to upset the Russians, though it's doubtful whether they've even heard of the game! Now the fuss has died down, it's back to the original title for this Atari release.

RAID OVER MOSCOW is a strategic shoot-em-up covering several different scenarios. You play the part of a squadron leader who heads a suicidal counter-strike on the Russian capital after those nasty Pinko Lefty Reds have dared to launch a nuclear attack on Good Ol' America.

The opening sequence is a world overview from S.A.C. Headquarters with the computer identifying the Soviet missiles and their launch site. Initially, your aim is to attack and knock out the launch site and here the action switches over to the U.S. Space Station where you attempt to launch one of your Stealth Fighter Aircraft to initiate the attack. Whatever happened to Ronnie 'Say Ed' Reagan's 'Star Wars' Defence System? – sorry, I forgot to tell you, the United States have supposedly dismantled all their nuclear weapons (a likely story!)

There's no gravity in space (how's that for a piece of off-the-cuff astronomy?), so actually getting one of your aircraft out of the space station is quite tricky. Fear not – after about 50,000 tries you'll eventually get the hang of it and you'll wonder what all the fuss was about!



Once outside, you plot a course to the launch site and then the screen changes to a 3-D Zaxxon-like display as you guide your plane towards the missile silos, avoiding enemy missiles and shooting down the odd helicopter or six. This part's pretty easy after the hassles of the space station.

When you reach the launch site you are confronted with a head-on view of the missile silos. The large centre silo is the important one. Knock it out – but you'll have to dodge some heavy flak and destroy defending aircraft to do so. Another easy screen. Complete this and the whole process has to be repeated three more times before you can advance to the city of Moscow.

In the city you quickly ditch your plane and assume the role of a combat soldier armed only with a solitary grenade launcher. Here you must blast your way into the main reactor room, which is situated in the heart of the Kremlin (what a crazy place to put a nuclear reactor!). Eagle-eyed Russian snipers make this a particularly difficult phase of the game.

Predictably, the hardest phase of all has been saved until last. Your ultimate task is to sabotage the reactor by knocking out the guardian robots with your disk grenades. Useless inventions these disk grenades as they seem to go everywhere except where you want them to! To cap it all the robots are invulnerable to a frontal attack and have to be caught on the 'rebound'. There are two robots, each requiring 4 hits apiece, which is probably why I've never managed to complete this phase and blow the reactor to smithereens, or whatever it is the Yanks call millions of tiny pieces?

I must confess to liking this game quite a lot. The different scenarios gives it added interest and prevents it from being just another boring shoot-em-up. As for the controversial element – it didn't register with me. At no time did I feel as if it were a Global confrontation and it may as well have been called 'Raid Over Macclesfield' for all the difference it made.

I feel sorry for all those silly people who ranted on in a certain popular computing magazine in an effort to make a political issue out of this game (Okay, so they were Comm 64 owners, but is that a good enough excuse?). In the immortal words of Joe Soap – 'It's only a game'. Anyway, nobody complained about upsetting the Jaggies when 'Rescue On Fractalus' was released, now did they?

PREPPIE

Americana
48k Cassette £2.99
1/2 players
1/2 joysticks

At one time Atari owners would have paid almost £30 for a copy of PREPPIE and still considered it a bargain. Now, this old favourite has been re-released on the budget Americana label at only £2.99.

Based on the arcade game 'Frogger' it puts you in control of Wadsworth Overcash, an unfortunate Prepster (American for 'schoolboy') who has been set to work retrieving wayward golf balls on the infamous 'Nasty Nine' – the

world's most treacherous golf course. Hazards abound in the form of deadly lawnmowers, golf-carts, bulldozers, logs, canoes, crocodiles, snakes and even a gigantic killer frog!

Back in the good old days, PREPPIE was an innovation as it introduced Atari owners to the joys of multiple colours on-screen at the same time. These days many programs feature 'Rainbow' colour bars using DLI's, but Russ Wetmore, author of PREPPIE, used the colours in such a way as to make it seem as if the Atari had a 26-colour graphics mode. A unique achievement and, to this very day, no 8-bit game can boast the colour range that PREPPIE has – even the title screen features text in 14 different colours!!

PREPPIE also broke the sound barrier, being the first game (as far as I can remember) to feature music in 2-part harmonies using proper attack, sustain and decay envelopes. Yes, those were the days folks, with everybody going around whistling the PREPPIE tune like it was Number One in the Top Forty. Four years on, the PREPPIE music can still hold it's own against the very best of computer sound tracks.

The game has a lot of humorous touches, such as the way Preppie gets squashed to ten times his normal size whenever he collides with a moving object. The original game also had some pretty zany instructions, which included a riotous tale of Wadsworth's life story. Alas, these have been forsaken for something a little more in line with the new budget package.

Apart from that, it's exactly the same PREPPIE of old and, even though it is showing it's age somewhat, no software collection is complete without it. I read somewhere that PREPPIE is the biggest selling Atari game ever. If it had been priced at £2.99 in it's heyday it would have been the biggest selling computer game of all time, no sweat! Buy it now and show all those Crappydore owners what full colour graphics are all about!!

ORB OF ZARRAMIER

Futureware
48k Disk £9.95
48k Cassette £7.95
1 Player
Joystick



The scenario for this game reads like a passage from 'Lord Of The Rings'. Don't be deceived by the rather over-imaginative script packaged with the game instructions, as ORB OF ZARRAMIER is a simple adventure game in arcade form with simple graphics to match.

You guide a small character through countless rooms, Shamus style, searching for the mystical orb which has been stolen by the Dark Lord. Gold, weapons, and other items can be collected along the way, but watch out for the Wraiths which guard some of the rooms. Pulsating barriers are a regular occurrence and these have to be negotiated properly in order to advance through the rooms.

Theoretically, it should be possible to go about your search in a logical manner. Drawing a map is advisable, as I tried to do things purely from memory and ended up running around in circles! Completing the ORB will probably be a long drawn out process but, like most adventures, you can save current game-play to disk or tape and reload it again at a later date.

This is a difficult game to sum up. True adventurers will heap scorn on it's arcade-style play, whilst arcade lovers will probably find it too boring to even bother trying to complete it. A nice idea, but the graphics could have been much better considering the Atari's potential. To use a well-worn reviewer's cliche – 'Try before you buy'.

SIDEWINDER

Futureware
48k Disk £14.95
48k cassette £9.95
1 Player
Joystick



This review is dedicated to all those egotistical mega-players out there who find most computer games far too easy to challenge their skills, and have been looking for a decent game to get their teeth into, or their trigger fingers at any rate. Okay, you lot – SIDEWINDER is the one!

It's been described in other less illustrious mags as a sort of horizontal 'Caverns Of Mars' but, in actual fact, it's more akin to a helicopter version of 'Airstrike'.

In the game you are the only survivor of a team of crack agents sent underground to capture SIDEWINDER – the very latest in helicopter technology. In order to escape, you must fly SIDEWINDER to freedom through a maze of caverns guarded by an array of fiendish defence and security systems.

SIDEWINDER has a fuel consumption along the lines of the Space Shuttle, so you must continually shoot or bomb all the fuel pods you encounter to keep the chopper airborne. This is particularly significant as there are no 'lives' involved in the game as such – each time you lose a chopper it is immediately replaced with another – but the game is over when you run out of fuel

SIDEWINDER is similar to Calisto's 'Warlok in the sense that you have to reach a landing pad at the far end of the cavern system and then return to the landing pad at the beginning to advance onto the next level of play. When you 'lose' a chopper you are penalised by having to restart all the way back at the previous landing pad. Frustrating is one word which springs readily to mind here, but there must be a better way to describe SIDEWINDER. Any offers??

An added bonus is the SIDEWINDER EDITOR which allows you to design your own Sidewinder screens and save them to disk to create your own customised version of the game. Futureware were offering a prize for the 3 best designed screens but, as SIDEWINDER has been available for some months now, the closing date for the competition has long since expired.

Despite the fact that you no longer have the option to win an Atari plus disk drive, SIDEWINDER is still an excellent package. If you like your games H-A-R-D then this is the one for you.

QUEST FOR THE MALTESE CHICKEN

Futureware
48k Disk £9.95
48k Cassette £7.95
1 Player
Joystick



A parody of the Bogart private eye movie 'The Maltese Falcon', QUEST FOR THE MALTESE CHICKEN is a nifty little platform game with clear, colourful graphics, a catchy title tune, and just about the correct level of playability – at least for yours truly to cope with!

Detective Bogey has taken on a new case – to retrieve the fabulous 'Golden Egg' of the MALTESE CHICKEN which it lays only once every blue moon, or every time Ocean release an Atari game – whichever comes first! Bogey has traced the chicken to it's mountain hideout and, to reach it's nest, he must first pass through the underground Enchanted Castle, dodging orcs, fireballs, soldiers, arrows, witches (similar to mother-in-laws but not quite as ugly),

snakes, and even killer balloons, whilst leaping across gaping chasms in his quest for that elusive egg!

Bogey begins at the top of each screen and must make his way to the exit at the bottom, collecting several keys along the way which eventually give him access to the next screen. There are 5 different screens in all before he locates the egg and thus advances to the next level of play. Just to keep things interesting, more and more adversaries are added as the levels progress.

As good as Sidewinder is, I rate the MALTESE CHICKEN as Futureware's best game so far. All credit to them for supporting the Atari and let's hope they continue to do so with games of this quality. Play it again, Sam!!

SCREAMING WINGS
48k Disk £9.95
48k Cassette £7.95
1 player
1 joystick/keyboard



Let's do this review back to front for a change, shall we? I'm going to start off by saying 'Buy this game now'. If you don't, you're going to miss out on the fastest, meanest shoot-em-up on the Atari since the brilliant Dropzone.

An initial glimpse of the ace loading screen (disk version), left me with the feeling that this game was going to be something special. I wasn't to be disappointed. SCREAMING WINGS is almost identical to the arcade game '1942' and puts you at the controls of a Lockheed Lightning fighter plane in the battle-scarred South Pacific during World War II.

The screen view looks down on the action from above, with continuous vertical scrolling in the same manner as Xevious, Flak and other such games. Press 'Start' and you are catapulted from the deck of your fleet aircraft carrier straight into the thick of the action. The Japs will hit you with everything they can, including kamikaze Zero fighters which home in on you like heat-seeking missiles! Throw yourself into a 'loop-the-loop' to avoid them.

Collect the 'X' explosions for extra firepower and the 'D' explosions for a special 'destruction' bomb which destroys everything in sight. An escort aircraft appears at random intervals. It flies in front of you for a limited period and acts as a shield, making your plane invulnerable to enemy firepower. If you make it back to your carrier, there's barely time to pause for breath before being catapulted out again to face the next wave of Zeros!

Everything about this game merits praise. It has great graphics, realistic sound effects, and riveting background music which can be turned off if it disturbs your concentration. Anyway, why am I wasting my time here when there's a war waiting to be won? Those darn Nips never give up, do they? Bandits at 12 o'clock high........

WAR-COPTER
48k Disk £9.95
48k Cassette £7.95
1 player
1 joystick/keyboard



This game from Red Rat combines skilful strategy with arcade action to form an intriguing new war game.

You are under attack from a neighbouring country and, as a result of a previous confrontation, your defences are now very weak. Your enemy sends powerful warships to attack your main base and your only hope lies with the heavily-armed and deadly Lynx helicopter which is at your disposal. You must deploy it against the attacking surface ships and missiles.

The game features four-way scrolling as you guide the Lynx into battle, making counter-strikes against the enemy warships and salvaging the raw materials which your armaments factory needs to produce more weapons and ammunition.

Your secondary aim is to protect your own base, but your primary objective is to attack and destroy the enemy's underground harbour and achieve final victory.

Apart from the usual joystick commands, various keyboard inputs are required to operate all the strategic functions, making WAR-COPTER quite a tricky game to handle at first. A good effort from Red Rat though – and top marks to them for an original idea. There's precious few of those about these days!

ROCKET REPAIRMAN
48k Disk £4.99
48k Cassette £2.99
1 player
1 joystick

Red Rat are stepping up their Atari support with a whole bundle of new releases plus the added good news that several of them are aimed at the budget market. ROCKET REPAIRMAN is one of these.

You are stranded on the distant planet of Leskos and, with the aid of your jet-pack, you must explore the maze of underground caverns for essential components of your astro-ship. By returning them individually to the teleporter pad, you can assemble your rocket and blast off to freedom.

The caverns are extremely narrow and inadvertently brushing the sides will damage your space-suit and cause leakage. Neutino Ghosts (sounds like an Italian spiritualist!) and Quark Phantoms wander the caverns and these will also drain your suit if they contact you. They can either be avoided or neutralised with your laser.

ROCKET REPAIRMAN doesn't break any new ground, but it is a compulsive little item which I found myself playing over and over again in a bid to complete the rocket and witness the 'grand finale'. Do I have to tell you that I never quite managed it?

I could criticise the bland colours and the naff explosion when your suit finally expires (it's more of a pop than an explosion), but that wouldn't be fair. At the asking price, it represents superb value for money.

NINJA
Mastertronic
48k cassette £2.99
1 player
1 joystick



I've heard complaints that there are far too many martial arts games about. Fortunately, the Atari market isn't quite as saturated with them as most other computers and there is certainly room for another – particularly when it's of the quality of this latest release from Mastertronic.

NINJA – a sort of oriental Rambo – is the latest in computer heroes. He is a man alone, on a life or death mission to rescue the Princess Di-Di who is held prisoner in the mysterious Palace of Pearls. He will face many tough adversaries – who are also clever exponents of the marshal arts – as he strives to save the Princess and, in addition to this, he must gather up several idols which she has dropped and return them to her to prove his worth. Yes, it's near impossible to please a Princess these days. You risk life and limb to rescue them and they're not happy unless you woo them with a few presents as well!

continued overleaf

Not content with having hands and feet which should be registered as lethal with the Eastern branch of Interpol, Ninja has several weapons at his disposal such as a slashing Samurai sword, spinning death stars, and a throwing dagger. To balance things up, these weapons are also granted to his opponents.

Things kick off with one of those typically oriental music scores – you know the kind I mean? – which, to my ears, sound as tuneful as a Max Bygraves LP. Nevertheless, it is catchy in a weird sort of way and sets the mood for the rest of the game. The graphics are neat and tidy with plenty of bright colours – a rare commodity in a high percentage of recent Atari games as new programmers can't seem to handle more than the regulation number of colours. Good, fast animation is probably the thing most people look for in karate games though – there's no point in having a punching, kicking, all-action Ninja if he moves around with all the agility of a rusty Dalek! – and the animation here is well up to scratch. Not quite in the same league as System 3/Epyx's 'World Karate Championships', but that's another story and another review.

NINJA scores high on playability. The key joystick moves are less complex than on most other games of this type and the difficulty level is just about right too. In the initial stages, the opponents don't put up much of a fight – a quick 'banzai' with the old sword and they crumble to dust (or 'splodge' to be more accurate) before your very eyes – but once you start having to tackle two and three of these brutes at a time you'll wonder if the Princess is worth all the hassle!

Although I can't fault the game itself, the instructions could have been better. For instance, you have to leap up through trapdoors in the ceiling to gain access to other rooms, but the instructions don't mention this. I spent ages wandering around like a one-legged Dodo on the lower levels before I accidentally stumbled across the secret of those trapdoors!

Mastertronic's games are improving with each new release. Their programmers are fast learning the subtleties of the Atari to produce top quality games at staggeringly low prices. Even at normal prices NINJA would have rated excellent value for money. At £2.99 you won't get a better bargain than this.



SILENT SERVICE

Microprose/US Gold
48k Disk £14.95
48k Cassette £9.95
1 player
1 joystick/keyboard

Destroyer approaching off the starboard bow.... Clear the bridge.... Tighten down the hatches.... Dive! Dive! Dive!.......

Humble apologies – I got ever so slightly carried away there. But then it's easy to go over the top when you're playing the exciting new submarine simulation from Microprose.

This company are well known for their computer simulations, mostly of the flight variety, but they've ventured underwater this time to produce what is, in my estimation, their best game yet.

SILENT SERVICE places you in command of a U.S. submarine patrolling the Japanese shipping routes in the South Western Pacific during the Second World War. It faithfully reproduces the role of a submarine captain to provide a level of realism and playability unmatched by any other game of it's type.

Many different options are available to you at the outset, but the best idea is to start off with a Torpedo/Gun Practice run until you get the hang of the technical aspects of the game. After that, you're ready for a full-blooded War Patrol!

Familiarising yourself with the layout of the submarine is the tricky part. The conning tower is the central Battle Stations screen and, from here, you use the joystick to access all the other screens. In effect, this lets you operate the periscope, transfer over to the bridge (when you're not underwater, of course), consult your maps and charts for enemy sightings, read the damage reports, view the Quartermaster's Log, and check all the various instruments, gauges and torpedo tubes. Different commands are entered on each individual screen and so you will require a good working knowledge of all these screens in order to operate the submarine smoothly and efficiently.

The first-rate graphics are perhaps the main feature of the game. However, they're not included merely for artistic purposes but, instead, give the simulation an added sense of realism. Speaking of realism – just wait till you're sitting there 100 feet below the surface, hardly daring to breathe, listening to the sound of a destroyer's engines overhead and waiting in mortal fear for it to drop those nightmare depth-charges! When the hair on the back of your neck stands on end and the sweat begins to trickle down your forehead ('Bosun – fetch my brown trousers please!') – now that's realism!!

Tactics are an essential part of SILENT SERVICE and you must plot your route to the convoy with great care (the time scale can be speeded up to reduce the boredom) as some of those Jap destroyers are a dab hand at running a sub to ground. You can take a chance (particularly at night) and attack the convoy on the surface, using the infra-red binoculars to line up your targets, or you can attack from the relative safety of periscope depth. Either way, it makes little difference as the first torpedo explosion will alert the destroyer to your presence, and it then becomes a cat and mouse game as you try to run to safety. As well as torpedoes you have a 4-inch deck gun, but using that against a destroyer is the worst case of suicide I've ever encountered! It's best used on the troop carriers and cargo ships.

At the end of your mission you are accorded a rank based on your skills (or lack of them!) as a submarine captain. Who knows, you may even get your name on the high score table if you're lucky enough – and good enough!

SILENT SERVICE has a multitude of options and features which I can't begin to go into here or we'd be at it for a fortnight. The old Thorn-Emi game – 'Submarine Commander' – has just been re-issued as a budget cassette release, but it is no match for this superb package from Microprose. The difference between the two is night and day. If you're looking for a simulation of this type, do yourself a favour and save up the extra cash to buy SILENT SERVICE. You won't regret it.

2 from BUG BYTE

QUEST FOR ETERNITY



Bug Byte
48k Cassette £2.99
1 Player
Keyboard

Another budget adventure from Bug Byte (text only this time). Like it's predecessor – 'Cloak Of Death' – it is also written in Basic. This might put a lot of people off, but it's actually quite a good adventure of it's type even if the screen

update is a little slow.

The scenario is as follows. You start out on a starship which doesn't seem to work too well. You must first get the ship operational and travel back and forth to various planets for much needed supplies and then try to find the teleporter booth which will transport you to the Chamber of Creation. Unfortunately, the teleporter booth is 2000 light years away on a slightly hostile planet.....

The game accepts 99 verbs and 162 nouns and, although it isn't quite up to Level 9 standards, it seems complex enough to test your average adventurer. At Bug Byte's 'cheapo' prices it must be worth a bash at the very least?

FOOTNOTE: Bug Byte keep mentioning the 'Battlegrom on Vragus IV' in all their game scenarios. It doesn't seem to have any significance and I wish they'd give it a rest as it's beginning to get on my nerves!!!

LEAPER

Bug Byte
48k Cassette £2.99
1 Player
Joystick



'The game you've all been waiting for' it says on the cassette inlay. Who are they trying to kid? Remember 'Leggit' from Imagine? (good title screen.... naff game). No, perhaps it's before your time. Well, this effort from Bug Byte is identical enough to be the same game.

There are certain cosmetic differences. New aliens have been created with real weird-sounding names like Gribbles or Grub-Gubs (will the raving loonie who thinks these stupid names up please step forward!!) but, as in Leggit, the idea is to make your way to the top of the screen by jumping up through gaps in a series of moving horizontal lines. The aliens have to be avoided, but these aren't the main problem – falling back down through the gaps is! Once you have fallen through one gap you invariably end up back at the bottom of the screen. Laugh? – I nearly bought a round of drinks!!

LEAPER runs pretty fast even though it was written in Basic. I do wish Bug Byte would start writing their games in machine code. Basic went out with Hippy beads and flared jeans!

There's not a lot more I can say about this one. It might have rated high marks on something like the unexpanded Vic-20, but the Atari is capable of much better things. At least there's no mention of the 'Battlegrom on Vragus IV' this time, which is something in it's favour I suppose! ●

JOHN SWEENEY IS STILL ADVENTURING

QUESTPROBE CHAPTER 1 – ADVENTURE 3

Fantastic Four featuring the Human Torch and the Thing
Scott Adams/Adventure International/All American Adventures
48k Disk
£14.95

I used to enjoy Scott Adams' adventures, but, rather sadly, they seem to have been left behind by the other main adventure producers like Level 9 and Infocom. It is not really fair to compare them with Infocom since they are designed to fit into a 64K memory (apart from the pictures), but Level 9's adventures are written with the same constraints as Scott Adams', and they get better all the time. Questprobe 3 seems, if anything, inferior to the earlier adventures in the series.

With the pictures turned off, Questprobe 1 (The Hulk) normally gave subsecond responses. The Fantastic Four has a three to four second response – what went wrong? (It gets even worse if you WAIT – the command WAIT 15 takes 30 seconds to do nothing!)

A response time of a few seconds can be quite acceptable, it is, for instance, quite common in Infocom adventures, but the difference there is that you know it is going to be worth waiting for the response. This, alas, is not true of The Fantastic Four. 99% of the responses from the adventure are: 'I see nothing special' (even single word descriptions of a few things would be nice), 'I don't know what xxxx means' (even for a word like PRINCESS, which is listed in its vocabulary!) and 'I didn't completely understand you' (you get this for even the simplest of sentences, e.g. OPEN DOOR – both of which are listed in its vocabulary – and this is the same door, in the Chief Examiner's office, which you COULD attempt to open in The Hulk!). But it gets even worse.

The adventure starts with the Thing stuck in a tar pit and the Torch nearby. You can switch between the two characters by typing in SWITCH. I flew the Torch over the pit and tried to get him to lift the Thing out. This didn't seem to be working so I checked the documentation, which is quite extensive giving long descriptions of the various heroes and villains in the story. Sure enough, the Thing weighs 500 lbs, and the Torch can get 'enough lift to carry around 180 pounds. By forming a jet from his feet, directed behind him, he can achieve speeds of up to 140 miles per hour'. This sounded like it might be enough to jerk the Thing free from the tar, so I typed in TURN ON JET – 'I don't know how to BEGIN something' – huh? I said TURN not BEGIN, and TURN is listed in the vocabulary! So I tried BECOME JET – 'OK', but all it did was switch me to being the Thing. It would appear that BECOME is a synonym for SWITCH, and it just ignored the word JET completely. This is hardly what one expects of a company which has been producing adventures since the beginning!

Anyway, I gave up trying to rescue the Thing that way, but did eventually discover how to save him from drowning in the tar pit. I also explored around the place a bit with the Torch and discovered how to work the cannon. After a few hours I had still found very few locations, and extremely few artifacts (three to be precise). I was getting bored. I had now reached a point in the game where the

Thing is stuck at the bottom of a shaft. Now the instructions say 'Your computer is able to understand long, complex sentences such as "CLIMB ALL THE WAY UP THE SHAFT"'. That sounded just right for my current problem so I typed it in. After my previous experiences with the game's inability to understand the simplest of English, I shouldn't have been surprised when it responded 'Your sentence has too many elements for me to understand. Please simplify it.' (Can we do them for false advertising?)

One final complaint – how come it can understand GIVE CANDLE TO THING, but not GIVE CANDLE TO RINGMASTER? I don't mind if he doesn't want it, but anything would be preferable to seeing 'I didn't completely understand you' appear on the screen yet AGAIN! There is absolutely no point in having a vast vocabulary of hundreds of words, unless you program the game to understand a few more sentences than those absolutely required to complete the game. It just becomes a guessing game as to which is the only valid sentence you can use in the current situation. This, combined with the atrocious response times for such a primitive adventure, results in what I can only describe as a disappointing and boring game.

It's got some pretty pictures – if you don't mind waiting while they load.

SPELLBREAKER – ZORK VI

INFOCOM
Diskette
£24.99

In the beginning was ZORK I. Then there came ZORK II, followed finally by ZORK III. Finally? But when, in the Scenic Vista room of ZORK III, the indicator on the wall said IV and you were magically transported to a strange altar, surely that was a preview of ZORK IV? Well, yes and no. The next fantasy game from Infocom was called Enchanter. But sure enough, deep in the middle of the Castle was that very altar (where you died yet again!), and if you check the diskette you will find the code Z4 on the corner of it.

Apparently the good people at Infocom discussed it long and hard before eventually deciding to move away from the name ZORK. They wanted to stress the fact that this was indeed a new series of adventures, with the protagonist cast as a Magic User rather than a Fighter. But the adventures continued to take place in the same mystic realm, indeed the young magician in Enchanter meets the adventurer from Zork I in his travels. Grues, Flatheads, and Frobozz Magic Items are everywhere. In Sorceror (Zork V) you even find an encyclopaedia and can read all about the history of this strange land, and you also reach the Western shore of the Great Underground Ocean. You wandered on the Eastern shores of it in Zork III. At the end of Sorceror the game promised that the trilogy would be completed in the not too distant future.

News, last year, that Infocom were releasing a new fantasy game entitled Wishbringer caused a great deal of speculation. But this turned out to be a Beginner Level game – hardly a worthy successor to the previous five? All becomes clear when you check the code on the diskette label – Z0! And, as an introduction to the series, an excellent game.

Finally, this year (last year if you have an ST or a friend in America), Spellbreaker appeared. It was well worth the wait. Enchanter is classed as Standard, Sorceror as Advanced, and Spellbreaker as Expert. Unless you are a real masochist it is probably worth playing some of the earlier adventures first, but if you wish to you can start with Spellbreaker. You don't need to have played the others first, but you will get more fun out of the references to people like your old mentor, Belboz, if you have. That said, Spellbreaker does tend to have less references to the rest of the series than most of the other games.

As far as the implementation is concerned, need I say more than that it is by Infocom? It understands English. It has as much text inside it as the average novel. It is extremely enjoyable to play. As the adventure starts you are at a meeting to discuss what is going wrong with magic. The fact that everyone in the room except you is suddenly turned into a reptile tends to confirm your fears that things are not quite right! Chasing a shadowy figure out of the Council Chamber you find yourself in the middle of your first problem – you are stuck in a thick and acrid cloud of orange smoke. Once you solve this you will find your first small white cube. Until you discover the secret of the cube you are stuck in a very small area. Unlocking the secret of the cube will take you to a strange place which leads to even stranger place – a cave inhabited by a sneezing ogre, an avalanche prone cliff side, an ancient ruin, and a giant snake, blocking three passages due to the fact that it is swallowing it's own tail! You will also start finding new spells.

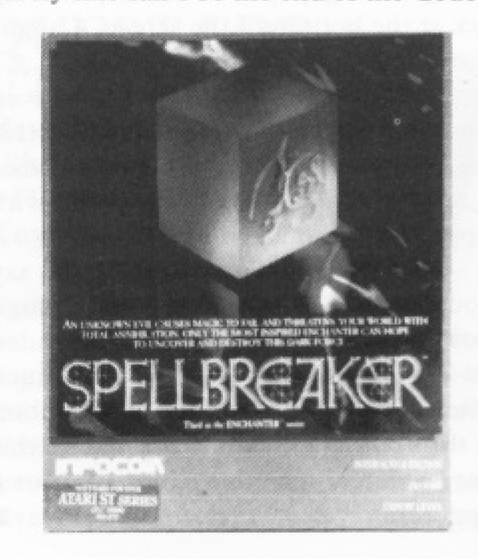
As in the previous two parts of the trilogy, you own a spell book containing numerous spells, including old familiar ones like FROTZ for making light and YOMIN for mindprobing, as well as new ones such as JINDAK to detect magic and LESOCH to create a wind. You will need to supplement these with spells found on scrolls which, apart from the most powerful spells, can be GNUSTOed into your spell book and used over and over again.

If you succeed in making progress against any of the numerous problems which beset you, the one thing you are guaranteed about is that you will find more cubes! And they are all identical in appearance! The first couple you find you can keep track of, but as you get more and more you will find it impossible. Never fear! There is not just one, but two, ways of distinguishing between the cubes. And you will need to do so since there are no less than seventeen of them! (You don't, indeed can't, actually acquire all of them, but you don't really think I'm going to tell you how many YOU have to find do you ?)

Each cube opens up new locations for you to explore. At first it all seems very disjointed, but you should eventually discover that things do actually join together a bit better than at first appears. The spells, artifacts, locations, denizens, and puzzles are many and varied. Definitely not for the faint-hearted and perhaps a little less humorous than some of the previous episodes, but solving all the puzzles and finally defeating the shadowy figure will be without doubt a joy for Zork-addicts and puzzle-fiends everywhere.

The author, Dave Lebling (make sure you read the glyphs on the pillar in the Grues' cave!), co-authored the original mainframe Zork (a strange and primitive mixture of what we now know as Zork I and Zork II), as well as Zork I, II, III and Enchanter. He also wrote Starcross and Suspect.

Spellbreaker was well worth the wait. Now that Infocom has finished their second Fantasy Trilogy – what next? Surely this can't be the end of the Grues?



Contact

BOOKS AND MAGS FOR SALE: Compute!'s 1st and 2nd Book of Atari £6 each. Compute!'s Book of Atari Graphics £6. ANALOG magazine issues 9 to 32, 36 to 41, 43, 45. ANTIC magazine Vol.1 4 to 6, Vol.2 1 to 12, Vol.3 1 to 4, 7, 8, 10 to 12. Vol.4 1 to 4, 6, 8 to 12. Vol.5 1 to 5. Will separate. Contact J. Bradbury on Sheffield 461430 (evenings).

VIP PROFESSIONAL: Can anyone help me in using this program? Mr. W.R. Bentley, Carrick, 97, Swithland Lane, Rothley, Leics. Tel. 0533 302862

FOR SALE: Atari 130XE, 1050 drive, Sharp TV/Monitor. Approx. 260 disks all in A1 condition. £500 o.n.o. K. Hall, 84, Fitzroy Way, Liverpool, Merseyside, L6 1JS. Tel. 051 260 3920 (12 – 4 p.m.).

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WANTED: The 'Puzzler' microscreen jigsaw puzzle program (cat. No. AP150 now discontinued) from the ANTIC Software Catalog. Will pay your original purchase price plus postage for full original copy. Contact Len Lawson, 100, Barons Road, Bury St. Edmunds, Suffolk, IP3 2LY or phone 0284 702373

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WS2000 MODEM: WS2000 Modem and Atari 850 Interface for sale, both with all cables and full documentation as supplied new. £50 each or £90 the pair. Phone Mike Doyle on 0509 267992

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FOR SALE: Pinball Construction Set, Music Construction Set, Rescue on Fractulas, Dropzone, Zork 1 & Hint Book, 3D Supergraphics on cassette. Books – De Re Atari, Computer Animation Primer, Atari Graphics and Arcade Game Design. The lot for £50 or will split for reasonable offers. John O'Halloran, 230 Squadron, BFPO 47

SHROPSHIRE ATARI USERS GROUP: Three months ago in Madeley, Telford, Shropshire, we formed the Shropshire Atari Users Group. We meet on the last Sunday of each month at 7 p.m. at the Peoples Centre, Madeley. We currently have a small membership of about twelve and would be very pleased to welcome new members.



by Mark Hutchinson

I would like to thank all the readers who have sent me the requested hints and tips for beginners. Many tips have been the same, but it is gratifying to receive the response. Special thanks must go to Robert De Letter from Belgium for his mass of tips. I must again apologise to all of you who have patiently waited a reply to your letters while I was enjoying(?) myself on a course in Stafford *(Any implied criticism is about the course rather than PAGE 6 ... I hope! Ed.)* but hope to get round to dealing with everything soon.

Following on from last issue here are a few more hints and tips.

XL HELP KEY: Most memory maps give the locations for the console keys. Here is the location for the XL help key.

PEEK(732) = 0.......No key pressed.
PEEK(732) = 17.......HELP key pressed.
PEEK(732) = 81.......SHIFT-HELP pressed.
PEEK(732) = 145......CONTROL-HELP pressed.

DOS: The following is a list of DOS hints mainly from Robert De Letter. Anyone using tape may wish to skip over this section.

To LIST your program or any text file without exiting DOS:
press C (RETURN)
type D:filename,E: (RETURN)

To get a printed directory listing from your disk:
press A (RETURN)
type ,P: (RETURN)

To reboot DOS POKE 202,1 (RETURN)

To chain a binary file to an AUTORUN.SYS from DOS:
press C (RETURN)
type filename.ext,AUTORUN.SYS/A (RETURN)

Fed up with having to type 'Y' to a DOS delete query? Add /N to the filename and the deletion becomes automatic.

You can write text directly to a file when in DOS by the following:
press C (RETURN)
type E:,D:Filename

RETURN will end a line and CONTROL-3 will end the file. Len Lawson should remember that one.

FOR TAPE USERS

In case the tape users feel left out, a few tips for them.

To save on memory, you can load up an introduction screen, show it for a few moments, then have it load in the main program automatically. To do this the file to be loaded must have been stored to tape using SAVE "C:". The main program can be run by having the last line of the previous program as RUN "C:".

The computer will look to see if the RETURN key has been pressed, and will wait until it has. To fool the computer into thinking that the RETURN key has been pressed you must use POKE 764,12:RUN "C:".

Remember, cheap tapes may save you money but they do deposit a lot of ferric dust onto the head. Make sure that you clean the head regularly. If you find it difficult to do so, open up the cassette door and look for a small lever at the back right hand side. Push this lever back and, at the same time, press PLAY and the head platine can be brought forward for easy access.

1027 PRINTER

Mr. J.E. Robinson informs me that, if you own a 1027 and Atariwriter, that the following will produce the £ sign at the point where the symbol is to appear. Do not use spaces or punctuation.

CONTROL-O 27 CONTROL-O 23 CONTROL-O 8 CONTROL-O 27 CONTROL-O 24

A second way is to select Option 1 for printer choice then, at the start of the document, use CONTROL-O 27 CONTROL-O 23. When you wish the symbol to appear, type in CONTROL-O 8.

LONG PROGRAM LINES

You may have noticed that some program lines are overly long and your computer will not accept these lines. To overcome this, POKE 82,0 to move the left hand margin two places to the left (i.e. the edge of the screen). Use abbreviations, a list of which appeared in past editions of PAGE 6 (issues 14-17).

1029 PRINTER

I have had a lot of enquiries about Print Shop and the 1029 printer. A letter from Mr. Pursglove informed me that the program will not support the printer. I can only suggest that the best way to persuade software writers that the 1029 is a viable printer in the UK is to write to the firm and complain bitterly. I know this sounds like hard work but it should be worth it. Most software is written in America and printers are competitively priced. The 1029 has not made the same sales as, say, Epson because of its smaller print head, thus very few 1029 printer drivers are written. However, if the demand is there then they will be written. Just for proof, my NEC 8023 was seldom catered for some years ago but now it is one of the standards (albeit under a different name) on printer programs.

I will continue to include any other hints over the next few columns but, as yet, I have not decided what direction to follow for this column in the new year. Any ideas? As always please write to me at P.O.BOX 123, BELFAST, BT10 0TB *(Editor's Note: I mucked up Mark's address in the last two issues. This one is correct. My apologies.)*

I hope that you all enjoy yourselves over the Christmas period and have a happy New Year. ●

BACK ISSUES

PAGE 6 back issues represent an excellent way of increasing the enjoyment of your Atari with articles to enlighten you, programs to type in and reviews of software to guide you. Almost all of the content of past issues will be as fresh and relevant today as when it appeared – increase your enjoyment now, before it's too late!

ISSUE 10 – ADVENTURE SPECIAL. An issue with Adventures as its main theme with a super, challenging type in Adventure HOUSE OF SECRETS, winner of our readers' poll for that year. Plus an interview with Scott Adams, a (nearly) complete list of Atari adventures, an Adventure cracker, Diamonds, Spinner, Screen Colour and the usual assortment of reviews.

ISSUE 13 – A great scrolling game FLIGHT OF THE SWAN that was one of the winners in our scrolling competition plus great games, Camelot, Bomb Escape and Bull Ants. Also Music Maker, 1020 Printer Handler, Player Missile Graphics in Machine Code, Music Reviews and our regular Adventure column.

ISSUE 19 – The first coverage of the ST but not to be outdone, plenty for the 8-bits. A great machine-language space game SECTOR 10, a super utility, Magfile, to keep track of your books and magazines plus The Chase. The second part of our series on Display Lists, build your own Speech Synthesiser, a review of 1985, in-depth Adventure reviews and plenty more.

ISSUE 20 – GRAPHICS SPECIAL. A super special issue with a graphics theme. Draw some masterpieces with GRAPHICS WORKSHOP and explore your graphics potential with Colour Palette, Picloada, Colour Attributes and CIO Slideshow. An in-depth review of Printshop and Graphics Art Department, the final part of Display Lists and the Adventure column. 11 pages devoted to the ST plus a colour feature ATARI ART and ST GALLERY. And there's more! BLOCKBREAKER is one of the best games to have been published in any magazine. Don't miss it!

ISSUE 21 – A packed issue with games, TRAIN CRAZY, Revenger and Forklift. Utilities Scalemaster, Quick Disassembler and Measuring Temperature. Programming hints with Doing The Impossible, Error 8 Solved and THE GUIDE TO ERROR CODES. Reviews of Flight Simulator II, Hitchhiker's Guide to the Galaxy, and the latest Adventures. For the ST a DEGAS to NEO converter, Lattice C reviewed and reviews of a whole host of software.

ISSUE 22 – More serious users will enjoy SMARTSHEET, a Visicalc like type-in spreadsheet, and our review of Paperclip whilst gamesters will puzzle over Tricky Cubes and try to survive Hidden Depths. The Guide to Error Codes is concluded and there are articles on Fractals, Tape Problems and some less well known Adventures. Loads of reviews and some great new routines for Blockbreaker. ST users will find out how to program Sprites and can read reviews on Time Bandit, Pro-Fortran 77, VIP Professional and more.

ISSUE 23 – Another superb machine language game Water Ski School will test your reflexes. Wordsearch will challenge those who like puzzles and other listings include Superclown and the utilities Xref and Verify. A huge review of Ultima IV heads a comprehensive review section and Going Online Part 1 will let you know if telecommunications is for you. ST owners can discover how to get a bigger screen on their colour monitor and read reviews of Zoomracks, Sierra On-Line adventures and Pro-Pascal amongst others. Also, is it worth adding a 5/4" drive to your ST?

ISSUE 24 – The biggest issue ever published! Great ST section with info about ST disks and cartridges and loads of reviews. For 8-bit users, MUNCHY MADNESS the best game we have ever published plus a super cheque book utility AUTOCHECK. Plus all about checking your disk drive, another game, more utilities, reviews of RAMBIT, Adventure games and lots more. Too much in this issue to list fully!

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ISSUE 18 – Contains BERTIE, GRAND PRIX II, BLITZ, LISTER, STARS, TYPO 3 and several programs on Display Lists.

ISSUE 19 – Contains SNOWFALL, THE CHASE, MAGFILE, SECTOR 10, STARKIES UTILITIES plus programs for the Speech Synthesiser and several programs on Display Lists.

ISSUE 20 – Contains BLOCKBREAKER, GRAPHICS WORKSHOP, COLOUR PALETTE, PICLOADA, COLOUR ATTRIBUTES, CIO SLIDE SHOW plus more Display List programs and pictures for Graphics Workshop.

ISSUE 21 – Contains REVENGER, TRAIN CRAZY, FORKLIFT, SCALEMASTER, DOING THE IMPOSSIBLE, QUICK DISASSEMBLER and MEASURING TEMPERATURE.

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ISSUE 25 – Contains – all the program listings from this issue.

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***old style does not have a pause button.**

Some popular printer covers are held in stock but most can be obtained to order. Please state exact model when ordering.

Beat those REVISION B BASIC BLUES with REVISION C!

by Brad Finney

If you are like most Atari BASIC programmers, you have 'discovered' the infamous keyboard lock-up bug the hard way, by losing a program you were editing. The bug, which strikes at essentially random times during program editing, causes the machine to completely lock-up, with control only being regained after turning the machine off, erasing any program in memory in the process. The bug first appeared in revision A of Atari BASIC, which was the official BASIC for the 400/800 machines.

When the XL machines were released, Atari attempted to cure this and other minor bugs with revision B BASIC. Unfortunately, the cure proved worse than the cough! Not only did the keyboard lock-up bug remain, but new bugs were introduced which mangled strings, shuffled program lines, and added 16 bytes to a program every time it was SAVEd. Atari has finally cured all of these bugs with revision C of BASIC that was built into the last batch of 800XL machines and is standard on the XE machines.

However, that leaves tens of thousands of us with buggy-BASIC! While the only long term cure is a hardware fix via a revision C BASIC ROM purchased from Atari, a software alternative is provided here. This program creates a second short program that can be quickly run each time you power on your machine or return to BASIC from DOS. This second program copies ROM BASIC into underlying RAM, and then patches the bytes required to upgrade revision B to C. Since a machine language routine is used, the entire process is finished in seconds.

Under normal circumstances, pressing RESET would turn ROM BASIC back on. To prevent this, the second program also includes a routine that turns RAM (version C) BASIC back on at the end of the RESET process.

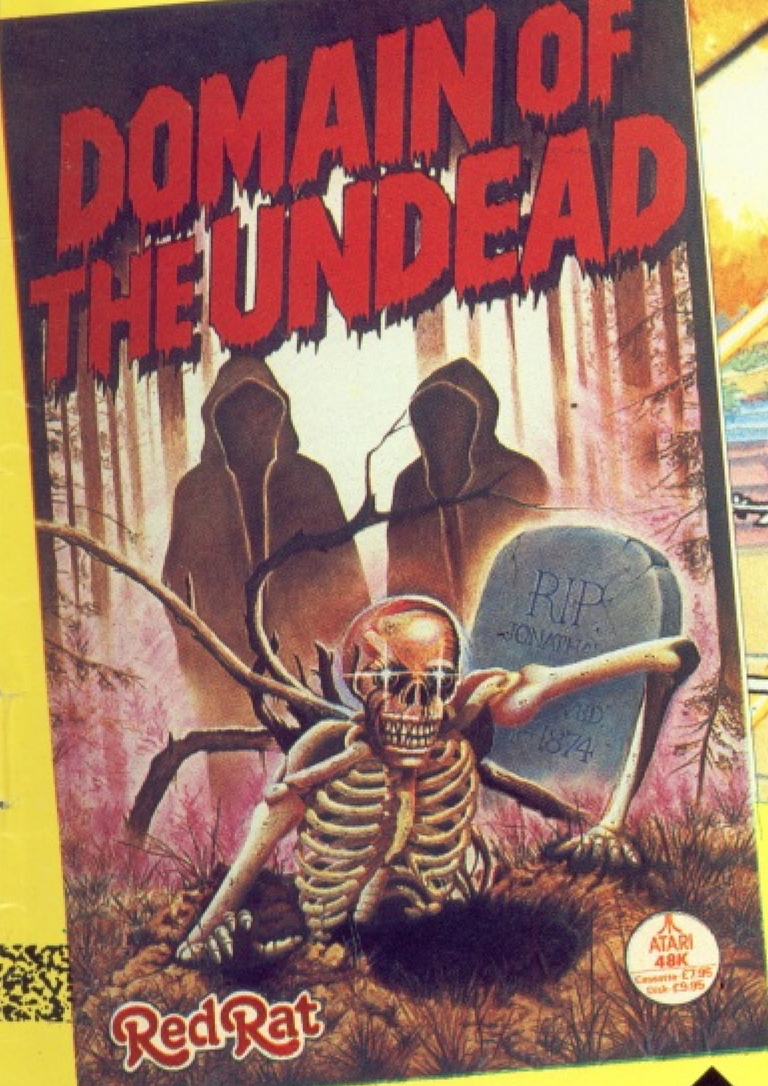
To determine which version of BASIC you have, PEEK at 43234. If you get 162, you have revision A, and this program is not appropriate. If you get 234, count your blessings because you already have revision C. If you get 96, you have revision B, and the first step to kissing the bugs goodbye is to type in and save the program given below. When the program is run, it will create and write a BASIC program called BASICC to disk.

Running BASICC will install revision C BASIC in RAM and install the RESET handling routine in the last 17 bytes of page 6 memory. Note that with the exception of these 17 bytes, no memory is lost, because BASIC now resides in previously unused (in BASIC) RAM underlying ROM BASIC. As long as you do not exit to DOS or power off your machine, revision C BASIC will remain installed.

The RESET routine, while handy in reinitialising RAM BASIC, does have a few side effects. The first is that the MEMSAVE feature will not work when exiting to DOS. The second (but minor) effect is that to exit to DOS you must type DOS (and RETURN), press the RESET key, and then type DOS again. These two extra steps are only necessary if you used the RESET key at least once in BASIC. If you desire, you can eliminate the RESET feature by deleting lines 140-160, and 180-220 in the first program. Under this condition, RAM BASIC can be re-installed after RESET by simply poking location 54017 with 255.

```
EI 1 REM ********************************
DE 2 REM *   REVISION B TO REVISION C   *
RQ 3 REM *              by              *
FC 4 REM *         Brad Finney          *
EC 5 REM * ---------------------------- *
IZ 6 REM *  PAGE 6 MAGAZINE - ENGLAND   *
EO 7 REM ********************************
NN 8 REM
NB 10 REM  THIS PROGRAM CREATES A
           BASIC PROGRAM THAT INSTALLS
           VERSION C BASIC IN RAM
AZ 20 REM
VA 30 PRINT CHR$(125);
XZ 40 A=PEEK(43234)
ZX 50 IF A=162 THEN PRINT "SORRY, YOU HAVE VERSION A BASIC.":PRINT "THIS PROGRAM IS NOT APPROPRIATE.":GOTO 380
UO 60 IF A=234 THEN PRINT "YOU ALREADY HAVE VERSION C BASIC!":PRINT "THIS PROGRAM IS NOT NECESSARY.":GOTO 380
LX 70 PRINT "CREATING PROGRAM FILE ";CHR$(34);"BASICC";CHR$(34);"..."
RH 80 OPEN #2,8,0,"D:BASICC"
VX 90 PRINT #2;"10 DIM S$(82)"
HE 100 PRINT #2;"20 S$=";CHR$(34);
JQ 110 FOR I=1 TO 82:READ A:PRINT #2;CHR$(A);:NEXT I
YQ 120 PRINT #2;CHR$(34)
AM 130 PRINT #2;"30 A=USR(ADR(S$))"
AD 140 PRINT #2;"40 FOR I=1775 TO 1791:READ A:POKE I,A:NEXT I"
YU 150 PRINT #2;"50 DATA 169,255,141,1,211,169,1,133,9,169,0,141,68,2,108,250,191"
JO 160 PRINT #2;"60 POKE 12,23:POKE 13,6"
CP 170 PRINT #2;"70 PRINT CHR$(125);";CHR$(34);"VERSION C BASIC INSTALLED IN RAM";CHR$(34)
GF 180 PRINT #2;"80 PRINT ";CHR$(34);"AND IS RE-INSTALLED AT RESET.";CHR$(34);": PRINT "
MP 190 PRINT #2;"90 PRINT ";CHR$(34);"TO GO BACK TO DOS, ENTER/PRESS";CHR$(34)
DD 200 PRINT #2;"100 PRINT";CHR$(34);"DOS RETURN";CHR$(34);" : PRINT "
JS 210 PRINT #2;"110 PRINT ";CHR$(34);"RESET RETURN";CHR$(34);" :PRINT"
MV 220 PRINT #2;"120 PRINT ";CHR$(34);"DOS RETURN";CHR$(34)
IR 230 PRINT #2;"130 END"
HQ 240 DATA 104,216,169,0,133,208,169
AK 250 DATA 160,133,209,162,32,160,0
RJ 260 DATA 177,208,72,169,255,141,1
HU 270 DATA 211,104,145,208,169,253,141
ZI 280 DATA 1,211,136,208,237,230,209
XA 290 DATA 202,208,232,169,255,141,1
FV 300 DATA 211,169,234,141,223,168,141
QB 310 DATA 226,168,169,240,141,224,168
EZ 320 DATA 169,17,141,225,168,169,243
WS 330 DATA 133,208,169,191,133,209,169
TJ 340 DATA 0,141,41,187,160,6,145
QG 350 DATA 208,136,48,251,96
LX 360 CLOSE #2
CY 370 PRINT "PROGRAM ";CHR$(34);"BASICC";CHR$(34);" IS NOW STORED ON DISK"
OI 380 END
```

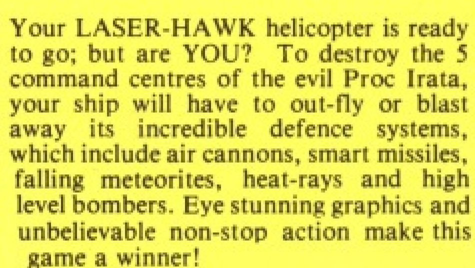




LASER HAWK

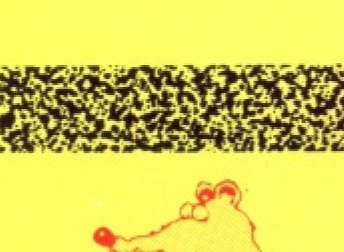
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MAKE A PAGE 6 CONTRIBUTOR HAPPY

and

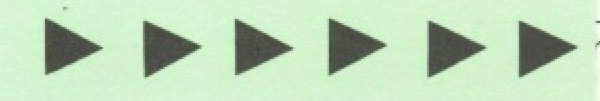
WIN YOUR CHOICE OF TWO BOOKS FROM THE PAGE 6 ACCESSORY SHOP

(Three winners in all)

Readers who have been with us for some time will know that each year we have a readers poll in which you get a chance to show your appreciation to those Atari users who have contributed to your enjoyment of Atari over the past year. For the 1986 Readers' Poll Awards we will present a handsome trophy to the contributor who receives the most votes in each of three categories. The categories are Articles, Programs and Miscellaneous and the contents of issues 19 to 24 are detailed below under their categories. You don't have to vote for one in each category, just pick out your three favourites in 1-2-3 order The following list will help you decide but don't forget, of course, to refresh your memory from the actual issue.

You may use any criteria for your vote, just pick your three favourites and enter them in 1-2-3 order. Maybe it's one you particularly remember, you might have thought it was well written, it might be something you have found particularly useful or which taught you something you did not know or solved a long standing problem. Maybe a review that prompted you to go out and buy a well-loved piece of software. Maybe a game that gave you hours of enjoyment. Whatever you wish, only make sure you vote, it is your chance to say thank you to fellow Atari owners who took the trouble to try and provide you with some extra enjoyment of your Atari.

Your vote will encourage our contributors to keep sending their programs, articles and reviews and will also help us to decide what should be in the magazine in the future. What's more, if you also fill in the short Survey you could also win some of those books!



Readers Poll 1986

PROGRAMS

SNOWFALL *by Fred Key (Issue 19)*
THE CHASE *by Nigel Llewellyn (Issue 19)*
MAGFILE *by Chris Davis (Issue 19)*
SECTOR 10 *by Geoff Thompson (Issue 19)*
BLOCKBREAKER *by Dave Hitchens (Issue 20)*
GRAPHICS WORKSHOP *by Allan Knopp (Issue 20)*
COLOUR PALETTE *by Garry Francis (Issue 20)*
PICLOADA *by Paul Lay (Issue 20)*
COLOUR ATTRIBUTES *by Paul Lay (Issue 20)*
CIO SLIDESHOW *by Ian Finlayson (Issue 20)*
DEGAS TO NEO *by Dave Keel and Steve Banks (Issue 21)*
REVENGER *by Paul Lay (Issue 21)*
QUICK ASSEMBLER *by Ata Atun (Issue 21)*
TRAIN CRAZY *by Colin Faller (Issue 21)*
FORKLIFT *by Stan Ockers (Issue 21)*
SCALEMASTER *by Peter Wright (Issue 21)*
ST SPRITES *by Chris Darkes (Issue 22)*
SMARTSHEET *by Ken Shiu (Issue 22)*
TRICKY CUBES *by Peter and Stephan Ohlmeyer (Issue 22)*
HIDDEN DEPTHS *by Philip Dennis (Issue 22)*
XREF *by Brian Smith (Issue 23)*
SUPERCLOWN *by Michael Kempster (Issue 23)*
VERIFY! *by Derryck Croker (Issue 23)*
WATER SKI SCHOOL *by Steve Hind (Issue 23)*
WORDSEARCH *by Jim Flewker (Issue 23)*
AUTOCHECK 4.0 *by Peter Franey (Issue 24)*
SPEED CHECK *by Garry Francis (Issue 24)*
FLYING HIGH *by Allan Knopp (Issue 24)*
MENU *by Ata Atun (Issue 24)*
MUNCHY MADNESS *by Paul Lay (Issue 24)*

ARTICLES

DISPLAY LISTS *by Steve Pedler (Issues 19/20)*
ATARI SPEAKS *by Kevin Griffin (Issue 19)*
FIRST STEPS *by Mark Hutchinson (various issues)*
GARRY FRANCIS' ADVENTURE COLUMN *(various issues)*
A GUIDE TO ERROR CODES *by Steve Pedler (Issues 21/22)*
DOING THE IMPOSSIBLE *by Paul Lay (Issue 21)*
SMOOTHER DLI's *by Paul Lay (Issue 23)*
MEASURING TEMPERATURE *by P. Bartram (Issue 21)*
FRACTALS *by Peter Coates (Issue 22)*
TAPE PROBLEMS *by Derryck Croker (Issue 22)*
GOING ONLINE *by John S. Davison (issues 23/24)*

MISCELLANEOUS

ASSEMBLERS FOR THE ST *by Matthew Jones (Issue 19)*
SHORT REVIEWS *by Jim Short (various issues)*
JOHN SWEENEY's ADVENTURE REVIEWS *(various issues)*
STARKIES UTILITIES *by Andrew Starkie (Issue 19)*
A LOOK AT TWO C's *by Matthew Jones (Issue 20)*
PRINTSHOP REVIEW *by Alan Goldsbro (Issue 20)*
GRAPHICS ART DEPARTMENT *by Alan Goldsbro (Issue 20)*
LATTICE C *by Matthew Jones (Issue 21)*
JUST LIKE THE REAL THING *by John S. Davison (Issue 21)*
FLY EVEN FURTHER *by John S. Davison (Issue 21)*
TIME BANDIT REVIEW *by Mark Hutchinson (Issue 22)*
PRO FORTRAN 77 *by Matthew Jones (Issue 22)*
TECHNICOLOUR DREAM *by Alan Goldsbro (Issue 22)*
MICRODEAL REVIEWS *by Mark Hutchinson (Issue 23)*
MENU + *by Matthew Jones (Issue 23)*
A BIGGER SCREEN *by Dave Keel (Issue 23)*
A 5¼" DRIVE FOR YOUR ST by Dave Keel (Issue 23)
PRO PASCAL *by Mark English and Adrian Merwood (Issue 23)*
HOMEPAK *by John S. Davison (Issue 23)*
CUT & PASTE *by John S. Davison (Issue 23)*
MAKING NOISES *by Alan Goldsbro (Issue 23)*
MAKING MOVIES *by John S. Davison (Issue 23)*
ULTIMA IV *by John Sweeney (Issue 23)*
COLOUR MAGIC *by Chris Fox (Issue 23)*
RAMBIT REVIEW *by Derryck Croker (Issue 24)*
SOFTWORKS BASIC *by Stephen Eitelman (Issue 24)*
CARTRIDGES *by Matthew Jones (Issue 24)*
K-RESOURCE *by Matthew Jones (Issue 24)*
PRINT SHOP COMPANION *by Alan Goldsbro (Issue 24)*

GAMES ... OR FUN

a whol

WINTER GAMES
Epyx Computer Softwar
£24.95

Reviewed by John Davison jnr

Winter Games is a simulation o Winter Olympic Games (it is the sequ to the highly popular 'Summer Gam which can be found on ATARI 8-bit micros). There are seven events to pl Hot Dog, Biathlon, Speed Skating, Figure Skating, Ski Jump, Free Style Skating and finally Bobsled. Every single event in the Games has its own theme music which plays while the event is loading. These are all extremely good and match, in a way, the type of event.

When the game first loads, a colourful animated title screen leads into the opening ceremonies, comple with the lighting of the flame and the fly past by some highly detailed dove You are then put on the main menu screen where you select to either compete in all the events, compete in some events, compete in one event, practice an event, see the world records, watch the opening ceremoni (again) or leave Winter Games. If competing in an event you can select your country out of a choice of 16. T section is almost the same as Summe Games on the 8-bit micros.

To give you an idea of what to expect let me take you through the events.

Hot Dog Aerials is a demonstration sport, you have to perform daredevil ski-jumps in front of a panel of judges. Moves you can perform include; Back and Forward Flips, Mule Kicks, Daffys, Back Scratches, and Swans. The graphics in this event are fantastic. The backdrop is just like an oil painting, with highly detailed pictures of mountains and trees. The animation is very, very slick.

Biathlon is a combination of cross country ski-ing and target shooting. It

music is well executed.

Ski-Jump. Fantastic graphics on this event and a really dramatic tune to get you going. The animation is also very good and the background graphics are (yet again) superb. Not a lot to really say about this one as it is straightforward and great to play.

Free Skating. This event uses the same graphics and movements as the Figure Skating. The differences are that you have two minutes to invent your own routine, and you don't have to do each move just once (you mustn't do more than three of each though). The music



Paradox were one of the first companies to release any game on the ST with Mission Mouse which ran in mono only. I never saw a finished copy but what I did see only really came into the 'alright' category. Nothing else seemed to happen for a year and then, suddenly, at the PCW show in 1986 Paradox leapt out with no less than six ST games all in glorious colour and

continued overleaf ▶

READERS SURVEY

or

How to be in with a chance of winning two Atari books of your choice.

Please take a little time to fill in and return the attached, quite brief, survey and to vote in the readers poll. If you have only just started reading the magazine please just complete the survey section.

With the two different Atari ranges it is important for us to identify our readers needs more closely and your feedback will be invaluable in deciding how we plan the magazine in the coming year.

We have included a section for you to indicate what you would like to see in the coming year. We have a couple of authors just waiting to research and write what you want, they just need the ideas! It is sometimes difficult to judge what users want as it is quite easy to think that a particular area has been covered elsewhere when in fact many people may not have seen other articles. Tell us what you want to read about and we will try our best to bring it to you.

Return the card by 31st January and you could be one of three lucky people to get the choice of any two Atari books from the PAGE 6 Accessory Shop. A draw will be made on 1st February from all the cards received and the winners will be notified as soon as possible thereafter.

Come on then, make our postman work for his living!

Name Ian Hanks
Address 35 MUNDANIA ROAD
LONDON
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READERS POLL

My vote for the best 3 items from issues 19 to 24 is

1. ....
2. ....
3. ....

PAGE 6 READERS SURVEY

1. What system do you own? ☐ 8 bit ☐ ST ☑ Both
2. Do you intend to buy an ST during 1987? ☑ Yes ☐ No
3. If you have both systems do you (will you) use them both? ☑ Yes ☐ No
4. Do you subscribe to PAGE 6? ☑ Yes ☐ No
5. What specifically would you like to see in PAGE 6 in the coming year?

...up with BASIC, then these actually alter some of the colour registers. In order to overcome this problem the colour registers should be set from within the program. This is done by the following code:

```
poke contrl,14: poke contrl+2,0: poke
contrl+6,4
poke intin,cr
poke intin+2,143*r: poke intin+4,143*g:poke
intin+6,143*b
vdisys(1)
```

where cr is the colour register (0 to 15) and r, g, b are the intensities of red, green and blue respectively in the range 0 to 7. Refer to the code starting at line 1410 for an example.

BASIC
resolution only

```
*************************
ST Othello              *
   by                   *
Lay, August 1986        *
----------------------- *
n low resolution        *
*************************
init
osub initboard: abort%=0:
 140
ver's Go "
getsquare: if abort%=1
=goes%+1: if goes%=60
ter's Go"
computermove: if abort%=1
s%<>60 then 110
countpieces: ps%=total%
countpieces: cs%=total%
: ? "Game Over "
: ? "Player ";ps%
uter ";cs%
omputer Wins!": goto 260
Player Wins!": goto 260
: ? " Okay? "
2 and my%>168 and my%<176
nd display the board ---
310  initboard:
320  fullw 2: clearw 2: color 1,3,1,1,1: fill 0,0
330  poke gintin,3: gemsys(78)
340  for x%=0 to 8: linef 5+20*x%,3,5+20*x%,163
350  linef 5,3+20*x%,165,3+20*x%: next x%
360  linef 172,38,298,38: linef 298,38,298,100
370  linef 298,100,172,100: linef 172,100,172,38
380  color 1,0: fill 201,39: color 8,4: fill 0,0
390  gotoxy 22,5: ? "ST Othello"
400  gotoxy 26,6: ? "by"
410  gotoxy 23,7: ? "Paul Lay"
420  color 2: gotoxy 23,16: ? " Abort "
430  for y%=0 to 7: for x%=0 to 7:
board%(x%,y%)=empty%: next x%,y%
```

1ST Choi... for the ATARI ST

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